



**THE
SEVENTH
LACUS
FORUM
1980**



THE SEVENTH LACUS FORUM 1980

edited by James E. Copeland
and Philip W. Davis



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THE SEVENTH

LACUS FORUM

1980

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INTRODUCTION

The Linguistic Association of Canada and the United States opened the decade of the 1980's with the seventh annual LACUS Forum on the Rice University campus in Houston, Texas (August 11-15, 1980). The 1979 Forum was held in Calgary, Alberta (the northernmost site to date), and the choice of Houston for this year's meetings (the southernmost site to date) represents a further expansion of the geographical scope. This expansion is also reflected in the growing international participation; papers were presented by linguists from twelve different countries and other countries were represented in attendance at the conference. To the linguistics faculty at Rice University the seventh Forum was an especially significant event, marking the beginning of a major expansion in the linguistics program and coinciding with the appointment of Sydney M. Lamb as Professor of Linguistics.

The original intent of the founders of LACUS was to achieve a broader orientation for the field of linguistics, within which a wide compass of divergent views could be presented and discussed, without polemic, in a friendly atmosphere of constructive comment. Each year the Forum presents an opportunity to reflect on our progress toward this stated goal. The *Seventh LACUS Forum 1980*, perhaps more than any of the previous six, exhibits such a range of interest that the usual grouping of the papers into subheadings has become more difficult than ever. No single approach yields a fully satisfactory grouping of the papers in this volume. What has emerged from the attempt is, instead, a rough arrangement into three large sections, somewhat arbitrarily established from within a continuum of content.

The three invited evening papers in Section I deserve special attention for several reasons. Sydney M. Lamb's Inaugural Address, "On the Aims of Linguistics," set the mood of the conference by challenging the members to redraw the boundaries of the discipline to incorporate the broader range of interests and concerns shared by the human sciences. Justification for this challenge was based on the similarity in the semiotic structures found in such divergent cultural phenomena as language, architecture, art, literature and music. His point of departure was Hjelmslev's distinction between "transcendent" and "immanent" linguistics. And in that context H. A. Gleason, Jr.'s Presidential Address was "immanent" in its approach, identifying the hallowed traditional concern of linguistics as that of writing grammars, while also stressing a parallel interest in the nature of the human mind. Professor Gleason's address was very well received and evoked a lengthy and spirited discussion. M. A. K. Halliday's invited lecture treated current tendencies in discourse studies and new directions in the analysis of texts, along with some stimulating new ideas for future directions.

Papers selected from those delivered during the regular daily sessions appear in the remaining sections of the volume: II. *Language in General*, including general linguistic theory and models of linguistic structure; III. *Language in Particular*, including text problems, conversational interactions, semantic problems and descriptive problems (diachronic and synchronic); IV. *Ecological Linguistics*, including papers dealing with a variety of applications of linguistics to language acquisition, bilingualism and translation. All of the papers were reviewed by the members of the Board of Directors of LACUS and selected to be read at the Forum. Some of those papers do not appear here, while others are included even though they were

not able to be read by the authors at the conference.

Support and financial assistance as well as secretarial services were received by the local arrangements committee (consisting of James E. Copeland, Chairman, Philip W. Davis, Roy G. Jones and Stephen A. Tyler) from various sources within Rice University: the Office of the President (Norman Hackerman), the Office of the Dean of Humanities and Social Sciences (Virgil W. Topazio), the Department of German and Russian (Roy G. Jones, Chairman) and the Department of Anthropology (Philip W. Davis, Acting Chairman). We also wish to express gratitude to Barbara Leppin Ginsburg for her many hours of assistance in arranging the conference and to Susan Davis for her work as editorial assistant.

The conference closed with a sendoff dinner at which the 'worm of promise' smiled on LACUS and assured Adam Makkai of seven years of plenty; and so it is with confidence that this flourishing fraternity looks to the future.

Houston, Texas
December, 1980

James E. Copeland
Philip W. Davis

I

1980 PRESIDENTIAL ADDRESS

GRAMMAR, GRAMMARS, AND GRAMMARIANS

H. A. Gleason, Jr.

University of Toronto

I am always uncomfortable, as are many of you, when I am confronted with the question: "How many languages do you speak?" I have on occasion tried to avoid it by claiming to be, not a linguist, but a grammarian. But the result is even more uncomfortable. The word "grammarian" brings forth astonishment, insecurity, and acute embarrassment; the conversation stumbles, if it does not die altogether. Even from a linguist it brings forth some puzzlement.

Yet I rather like the term. A grammarian should be one who investigates grammar and produces grammars. It just might remind some of us of these two parts of our professional duties: to investigate grammar, and to produce grammars. On one or both of these, we should-be grammarians have been less than diligent recently. In the last generation, for example, the number of grammars produced by academic linguists seems to have fallen. But in that same period, the number of academics in the grammar segment of the field has risen phenomenally.

This has not gone unnoticed. Paul Postal in 1972 (p. 168) remarked:

If generative research does not consist of the construction of generative grammars, it is important to ask what it does consist of . . . today such research consists in the construction and validation of arguments supporting this or that claim about particular grammars, or the general theory of grammar. For a time, this kind of activity was pushed into the background by the goal of pursuing here and now the construction of actual grammars. As the latter has come to be seen as more and more unrealistic, the other has naturally expanded to fill the gap.

That the "construction of actual grammars" is seen as a temporary aberration in the discipline can be dismissed as mere rhetoric. Yet the passage does seem to suggest that it is more useful to construct claims about grammars than to actually construct grammars. But there is a lurking suspicion that the statement is motivated not so much by considerations of usefulness as of relative difficulty.

In any case, the profession seems indeed to have turned away from producing grammars, and in some circles is now fabricating justification for doing so. Rather than grammarians investigating grammar and constructing grammars, we seem increasingly to be investigating grammars and constructing grammar.

And we investigate grammars without any concrete examples to dissect and evaluate, without feeling any need for such, and indeed quite complacently confident that none can be produced. We do need to ask some questions about grammars, but about actual ones, or presumably attainable ones. And some of the questions need to be very pedestrian: What is a grammar good for? Who is a grammar useful to? What, therefore, are the responsibilities of grammarians? That is, what should we be doing and why?

I want to touch on some of that constellation of questions. Nevertheless, I shall start from a highly idealized definition, one that has been highly popular and widely influential in the recent thinking of linguists. Behind considerable variation in precise wording is something like this:

A grammar is a device which generates all and only the sentences of the language.

By "device" is meant, of course, some sort of algorithm, a set of rules, preferably stated in some specialized language, say an arrow notation or a relational network, or any of the latter-day competitors. We will pass up the opportunity to comment on the very much less clear notions, "generate" and "sentence", merely assuming, as is quite customary, that they make sense to all of us.

On that basis, this now classic definition can be read in either of two directions: defining "grammar" in terms of "language", or defining "language" in terms of "grammar". Let us refer to a grammar of the sort contemplated as an "algorithmic grammar" – in preference to the now thoroughly misleading "generative grammar". Given such a grammar, there is defined a language; I will speak of it as an "algorithmic language".

Out there somewhere, in the reality of nature, is also something that can be designated "language", something that we as linguists have a special interest in. Let us call an appropriate example a "natural language". With these two definitions of terms, we can now pose our initial question: What is the relation between an algorithmic language and a natural language?

At the present state of the discipline, with no seriously proposed examples of an algorithmic grammar, for, say, English, there is no algorithmic language, but we will take a lead from current practice and ask our question not with reference to any existing grammar, but some ideal algorithmic grammar and its language, the sort of grammar we can't imagine, only dream of. I am, in short, posing the question on the traditional ground.

One categorical statement can be confidently made: Whatever the relationship, it cannot be identity. There is no way we can contrive to make it identity. No algorithmic language, however ideal, can be identical with any natural language, however selected.

This follows immediately from the fact that an algorithmic grammar is, by definition, a well-defined system, and its derived algorithmic language must also be well-defined. A natural language, on the other hand, by the fact that it exists in nature, cannot be a well-defined system. Well-defined systems simply do not exist in nature.

The basic principle is, for linguists, most clearly set forth in Hockett's *The State of the Art*, one of the most studiously neglected publications in recent linguistics (another is Householder's *Linguistic Speculations*). Their stipulative non-existence attests eloquently to their fundamental importance. Kuhn can be misapplied as an argument for the eternal significance of the present paradigm. Peters and Ritchie can be glossed over as identifying some correctible problem of detail. But Hockett is too dangerous. If forced into the debate, it must be immediately and decisively dismissed as mere crackpot mumblings, as a bad joke, as a monumental mistake by a publisher notorious for inconsistent standards. Students must never be allowed to witness it being taken seriously, even for rebuttal on some marginal point.

Given that an algorithmic language is a well-defined system and a natural language a non-well-defined system, identity is excluded. The only possible interesting relationship between the two is some form and degree of approximation. Not just in practice, but in principle. That is exactly the situation that applies between any well-defined scientific law or model and the facts of the physical universe. That is why Newton and Einstein and several others can all stand. The universe contemplated by each is different in a crucial way from the universe which it is employed to describe. Each gives an approximation to the facts. Indeed, each gives a very close and useful approximation to most facts. Nor is it simply that one gives a closer approximation and one a less close; there are differences in kind as well.

What can we say about actual or potentially actual algorithmic grammars, rather than an ideal one? Exactly the same thing: It would give an approximation to the facts. Or about an informal, non-algorithmic grammar? Again, the same thing: it gives an approximation to the facts. A grammar is not, therefore, privileged because it is algorithmic, nor is it because it is non-algorithmic. They stand before the same bar of judgement.

When we are dealing with approximations, it does not make sense to say that one is correct and another false, only that one is closer and one less close, or that one is an approximation of this sort and one of that, or that one is closer here and looser there, while another is looser here and closer there. Moreover, as soon as the question becomes one of relative value rather than absolute correctness, then the choice must be related to objectives and to relative costs.

If the objectives in constructing grammars are various – and they must be – it follows that there can be a plurality of best grammars. If grammars are to have real uses – and they must have – then costs are a factor, and it follows, again, that there must be a plurality of best grammars.

Now those several best grammars, each best for some specific objective or circumstance, might, it would seem, all be constructed on the basis of the same linguistic theory, and in that case, while there would be no “correct” grammar, there might be something like a “correct” theory. It would be correct in the sense that it would be required for any effort to produce the best grammar for some given purpose – a pragmatic rather than ontologic correctness, you will note. But even this is highly unlikely.

Associated with the notion that a grammar is a device to generate all and only the sentences of a language has been a characteristic formulation of the goal of linguistic theory. The two are not necessarily inseparable, but historically they have been very tightly bound together. Linguistic theory, we are told, has as its goal to explain the human mind, or at least to explain the language faculty of the mind.

That seems to me to be claiming for the discipline both too much and too little – too much, because it is not at all certain that linguistics, particularly formal linguistics, can do that, and too little, because there is much else that linguistics should be doing. There is, indeed, a certain note of absurdity here. It is commonly assumed that a formal, algorithmic grammar would be, of itself, an explanation, the desired sort of explanation, which is to say that the mind is an algorithm. And that notion is labelled “mentalism”! It seems, rather, to be the ultimate mechanistic reductionism.

The term “algorithm”, supported by a cluster of related notions and ways of thinking, is, after all, a comparative newcomer in intellectual centre stage. That it

has star billing today is hardly disputable. A couple of decades ago, the term "algorithm" was a rather esoteric one, restricted in currency to certain mathematical circles and their immediate neighbours. Associated ways of thinking extended only a little, if any, farther. What changed the situation, of course, was the computer explosion. In an ever-expanding area of practical and intellectual life, computer concepts are shaping our thinking. "Algorithm" is becoming known, and even reluctantly respected, in the farthest reaches of the humanities. The Chomskyan revolution rode on this wave, and indeed, gave it momentum within linguistics.

Please do not misunderstand me. There is a bit of folk-lore, persistent among free-thinking linguists, that Transformational Generativism was produced to serve mechanical translation. It was not. Early transformationalists were contemptuous of machine translation, if for no other reason, because they had already developed a profound disinterest in applications. The influence of the computer explosion was much less direct, but none the less real. It was simply that algorithmic approaches to grammar were in touch with the *Zeitgeist*. This being the case, algorithmic notions have almost as easily permeated other schools of linguistics, as they have transformationalism. We have stratificational and tagmemic arguments that those theories are also "generative", and when not argued, it is often obviously assumed.

It might be well, then, to look at linguistic theories and at the human mind — or the brain — in computer metaphors — "metaphors", please note, nothing more.

A modern computer consists of a very large number of interconnected logic devices. These are individually very reliable, with failure rates of one in many millions, and individually very fast, with speeds measured in nanoseconds (billionths of a second). Because of this combination, it is safe and feasible to process algorithms that consist of very long chains of individual logic operations performed one after the other.

By contrast, the human brain consists of an even greater mass of logic devices. These are individually of much lower reliability and speed — very much lower. Anything like a typical computer programme must almost inevitably fail, and almost inevitably take far too long. Instead, there must be a great deal of parallel processing, numerous operations conducted simultaneously, and even so, there must be a great deal of error, so that the system must have a large part of its bulk devoted to error prevention and error counteraction.

No computer with present technology can directly model the brain. One might, fairly well, simulate the result — but that is a very different matter.

We are not here interested in hardware modelling, that is, in putting together a large number of silicon units that would replicate in structure and function some mass of neurons, but rather in writing a grammar. Yet the same difficulty remains: Our grammars are, basically, serial programmes, fundamentally different from the operating systems of the human mind.

There is another aspect to the same argument: An essential ingredient in all our methodology is the seeking after simplicity. We take that for granted. It is fortunate that we do, because arguing about it — or almost any aspect of it — is a most unprofitable business. The concept of simplicity is unusually slippery, and will not be pinned down to any neat formulation, any set of criteria, any clear procedures. Yet we continue, and must continue, to rely heavily on simplicity in building and judging our theories.

Biological systems seem to go the other way. They are profligately redundant.

They are so because the individual components are noisy devices, and the internal noise must be coped with. They are so because biological systems are unstable over time. Neurons die; synapses are broken. Business must go on as usual during alterations. That makes demands totally foreign to our usual notions of efficiency. The way biological systems are designed is no way to write a grammar, except for the infant who is writing it in his brain.

With differences of this sort and this size, it is absurd to assume that our dreamed-of algorithmic grammar could have the sort of psychologic reality that we seem to yearn for, whether it be transformational, stratificational, or of any other sort. Not, certainly, unless there is a total change of direction and basic strategy for formal linguistics. But if we were to try to build grammars the brain's way, with high redundancy and a great deal of noise management and all the rest, the grammars would be much less useful for every other task, including the proper rôles of grammars in the investigation of the nature of mind. What then are those rôles?

First, a grammar organizes a block of the data. The nature of the human mind is an immense problem. The data already at hand is voluminous, and constantly growing. Part of that corpus is a vast body of texts and text fragments. These are data because they have been produced by the mind and are, indeed, a most characteristic product. The mass, however, is such that it cannot be handled directly. Section by section, the corpus of data must be reduced to manageable order and bulk in advance of its use. A grammar is, in effect, a segment of the data rendered manageable. It is a succinct description of the presumed significant features. It is, if you will, a shuffling of the data, a purposeful, useful, essential shuffling.

But that is not all that we grammarians are called on to do, only a first step. The grammars collectively would be a bulky, heterogeneous, and awkward corpus. They must themselves be further processed into some sort of systematic cataloguing of generalizations about grammars — that is, into a segment of general linguistics. Such a general linguistics is no melding of disparate grammars into a single universal grammar. Nor is it a mere listing of "language universals"; the evidence on the mind rests as much in the diversity as in the uniformities. The evidence that linguistics marshalls is input to the investigation of mind along side of the material marshalled by other disciplines. One bit here may be more revealing than a bit there. But the evaluation can only be made clue by clue; the input from no discipline has seniority by right.

Second, grammars are tools. Many disciplines must divide among themselves the labour of processing the data input, each bearing responsibility but none being autonomous. Each, linguistics included of course, requires for this task certain tools, some internally produced and some obtained from neighbours. Language data is not the responsibility of linguistics alone — only certain properties of language. Others, too, must deal, each in its own way, with language or with parts of the data that impinge on language. These must have grammars as tools. The grammarian's responsibility to the investigation of mind is expressed in part by a responsibility to neighbour disciplines.

Our virtuoso or prima donna approach to the investigation of the mind has led us to focus on the form of grammars, rather than on grammar production, on autonomous theorizing, rather than on cooperative accumulation and ordering of evidence. But the notion that the abstract investigation of the properties of al-

gorithmic grammars is, of itself, a direct attack on the problem of the mind is a conceit, a presumption, an instance of supreme disciplinary arrogance, and as such, an enterprise that is not only doomed to fail but to fail ingloriously. In fact, a genuine interest in the problem of the mind makes exactly the opposite demand, to produce actual grammars, among them, specifically, tool grammars. Theory contributes only as it helps with grammar production.

The second difficulty with setting an understanding of the human mind as *the* objective of linguistics has been that it has destroyed or damaged any sense of responsibility to any other problem, linguistic problems and problems resting on the shoulders of others. We must be careful. Linguists have a sad history of being very forward in telling other disciplines how to do their work and solve their problems, in the process forgetting our own debts for tools and ideals. Our obligation is an humbler one: we must make our results intelligible to outsiders, and thereby make them accessible for whoever finds them suggestive. We must acknowledge our indebtednesses, and become a little less proud so that we can seek needed help.

I will not attempt to enumerate the disciplines which might find grammars useful, were suitable grammars available. To do so would require encyclopaedic knowledge I do not have. But let me mention just one with which I am familiar.

I came into linguistics from a background that included Scriptural exegesis. There I had become rather intimately familiar with Gesenius' *Hebräische Grammatik*, and its derivatives, and their dependent literature. These are indispensable tools. I knew them to be poor in some respects. I dreamed of better, and even explored the possibilities of working at producing something better. Everyone in that field uses grammars, and everyone wishes for improved ones. An occasional philologist has naively assumed that linguists might come to their rescue.

The framers of the National Defense Education Act shared that hope. Money became available, in some quantity, to produce what were labelled "reference grammars" of "neglected languages". I took that to mean instruments to which a properly qualified non-linguist could go with a grammatical question about language or text and have a reasonable prospect of finding an answer. But in many of the grammars that were produced, such a user would not even have a reasonable prospect of finding a place to look. Many were produced without so much as an index, indeed with no aid to access of any kind. Moreover, in many, no conveniently readable section could have made sense if it could have been found — the grammar was too tightly integrated for that. The grammars were written by linguists, for linguists, because too many linguists did not conceive that a grammar could be anything but an internal document for the initiate.

I have a faith that if we put our minds to it, we grammarians could devise ways of presenting grammars at least as good as our traditionalist predecessors had. I can, usually, find a relevant place in Gesenius if it is there; I can usually read a reasonable portion and determine whether he has any wisdom to offer, and what. I am sure we modern grammarians could produce a better grammar, and I have hopes that it would be better not only in content but also in access.

All this is a matter, perhaps, of nothing more profound than proper packaging. But if so, packaging is important. Grammars are one of our few saleable products. It would be a shame if only packaging held them off the market.

But I think there is something more. Grammars are tools. What can we say about tool design?

Consider a saw: You lay out the teeth, so many to the inch; select their configuration, rip or crosscut, or whatever; decide on their set. All these, and some other matters, are determined primarily in reference to the material to be cut and the circumstances attendant on the cutting. But you also design the configuration and placement of a handle. The problems here are solved largely in reference to the intended user and his anatomy. And then there are certain other decisions, for example, the over-all dimensions, which stand midway in the continuum, determined more nearly equally by both sorts of considerations.

Tool-grammar design presents the same two aspects. Like the handle of the saw, the access apparatus, including an index, is designed very largely for the user. Much of the "cutting edge", the actual rules, are determined largely in terms of the material and the conditions of use. The over-all format particularly, and much else as well, must be planned around a combination of factors, the language, the user, and the circumstance of use. A general purpose grammar, like a general purpose saw, does none of its tasks easily or well.

User orienation in a grammar is both a burden and a blessing to the grammarian. The grammar writer does have to assume more responsibility for non-grammatical matters than many would like. Knowledge of grammar users and conditions of use must take their place alongside the linguist's technical competence.

But at the same time, he can rely on the "common sense" or Sprachgefühl of the user to avoid getting entangled in the confusing little mazes that formal generative statement leads one into. Every transformational minigrammar that I know has an affix-hopping rule that seems workable, and is in fact regularly made to work. But it seems so only because the user applies the rules with some judiciousness. Actually, none of the textbook examples known to me actually works if taken literally, that is, "generatively". Their failures are sometimes piddling. But they do, often, distract our attention from the main issues, so that our view of language is sadly distorted. User-oriented grammars may force us to keep things in perspective, and in so doing make a significant contribution to grammar investigation, and even to abstract theory.

That is not to say, of course, that more formal, abstract grammars do not have their place. Nor even, that attention to minute detail is misplaced or wasted. These things are important, and will continue to be important. But they are more valuable if kept in perspective.

But it is more than that. A problem so tricky that we shy away from formulating it may lose its terrors. Consider sentences like these:

Today is Thursday.

Tomorrow is Tuesday.

These have, as I am speaking this, different degrees of acceptability. Detaching them, however, from the specific present, we observe that each varies in acceptability over time, cyclically over seven-day cycles. By a standing decision made centuries ago and just taken for granted today, linguists rule such matters outside their discipline. We make some other comparable decisions. Taking all these together, we can say that both sentences are "potentially acceptable". Such a notion takes care of a number of other-wise problems. It justifies our inclusion in our corpus of much that we would like to have there and eliminates questions of truth-value and the like from our domain. We decide — it is of course a decision — that linguistics will deal with something like potential acceptability rather than actual acceptability. The

decision has, in general, proved to be a wise one.

We observe, empirically, that certain phenomena occur, in a single text neighbourhood, various numbers of times. No obvious upper limit commends itself to us, so we decide — again, it can only be a decision — to treat these by making certain rules recursive. The grammar, if we think of it as generative, defines a set of sentences; using now the traditional terminology, we can say that it generates the set of grammatical sentences. At first sight “grammatical” and “potentially acceptable” seem very similar, perhaps synonymous — or at least they can be made to be. But they are not at all. With recursion there are many “grammatical” sentences that are not “potentially acceptable” — infinite sets of infinite sets of such. The concept of “grammaticality” has commended itself to linguists on the basis of properties that are really those of “potential acceptability” or something very much like it. So we must ask: what is the relation between the two notions? The answer is that there is no interesting relationship whatever. A while ago, I held out the hope that an algorithmic language might be a useful approximation to a natural language. This may sound like a reincarnation of the same argument. It is not, because the result is much different. The set of “grammatical” sentences is not an approximation, not even a very bad approximation, to the set of potentially acceptable sentences, so long as the grammar contains recursion. If this is the case, if the out-put of an algorithmic language cannot be even an approximation to anything of interest in a natural language, we should have a hard time justifying any interest in an algorithmic language with recursion. But we always include recursion, because it is always far the simplest way to meet certain empiric demands.

But now take that grammar out of the “generative” framework, in the first instance by converting it to an interpreting grammar. The problem disappears. No recursive rule is applicable beyond some small number of times, fixed in each instance by the situation in the text being interpreted. Those infinite sets of horrendously unacceptable sentences simply don’t matter in the slightest.

Or, again, convert that grammar to a sentence-producer’s tool grammar. The user now is free to produce any of those ridiculous examples. But we can be confident that he will not — unless he wishes to do so, as linguists occasionally do, just to show what grammaticality may mean.

User orientation has, in either instance, removed the dilemma; we can indeed, have the simplicity of recursive rules without having also the empiric vacuity of a grammar generating a wholly irrelevant set of sentences.

The preparation of a grammar always leaves certain refractory bits of the data unaccounted for. Some of these seem obviously to be of a sort that does not belong in the corpus, an anacoluthon, say, or a slip of the tongue, or a code switching — the possibilities are numerous and quite diverse. These should have been eliminated in the preliminary corpus preparation, but no matter, they can be simply discarded at the later stage where they are detected. Others, however, seem to genuinely belong. Linguists have been too free and easy about just overlooking these. This is, of course, self-defeating; among them are very likely to be the items that lead us to new problems or that supply the key to some old one. They may, in short, be the most valuable parts of our corpus. If not for the descriptivist’s work, very likely for the historical linguist’s. One of the great incidental disadvantages of working by introspection, alias “intuition” and on the narrow selected corpus which that implies is precisely here. The linguist does not have in his file a section of residue. “Fleas”, Mark Twain said, “are good for a dog” and so here, though for a more important

reason than what he gave, "because they keep him from brooding on being a dog". In the present disarray in the profession and academia generally, perhaps, his reason may have a touch of relevance.

One reason we have tended to belittle the residue is rooted in the fact that we have been seeking "the correct grammar" and operating in a hyper-Popperian framework, where any single counter-example invalidates a theory. If physicists operated on such a standard we would have no law of gravitation, Newtonian, Einsteinian, or any other. All of them have counter-examples of various sorts. Some constitute stimulating challenges to the research physicist. At the other extreme is that stretch of road in New Brunswick. Motorists turn off their motors and coast up hill; we simply make it a tourist attraction. Linguistic counter-examples likewise range from significant challenges to mere curiosa. Part of the art of linguistics is to discern which is which.

If we view grammars not as attempts to capture absolute truth, but as approximations, it might help us take a more healthy, relaxed attitude toward residues, rather than pushing some aside and branding others immediately as counter-examples. That might be a very significant net gain for us all.

But there is more than that. We need to rehabilitate the term "exception". Approximating grammars do have exceptions, and they are nothing to be ashamed of. Exceptions are simply patterns for which the grammar writer knows no analysis, or where the analysis would be so complex as not to be feasible in the grammar being written, or where the integration into the dominant pattern would confuse and distract the user, or an item which is best described under a different model — the non-conforming rule then seems to be, in this grammar, *ad hoc*.

The frank use of exceptions can, indeed, be creative. It can allow the practical grammar writer (and many of our grammars should be practical — tools for others) to cover what is needed in a clearer more useful way.

This is so because the grammar writer, if he is frankly producing a useful approximation, has a choice, often, as to which item will be the exception. He has a choice between types of exceptions, and the significance of these types varies with the kind of grammar, or with the intended use of the grammar.

Indeed, we can sometimes elect a description which is widely off the mark, but entirely harmless. So harmless, indeed, that we do not even need to mention any exception. This is the case, for example, if a rule in an interpreting grammar covers instances which are impossible for whatever reason. The examples will simply never occur in the input. I have already cited a specific case. Interpreting grammars can be very free with recursion, and there will be no bad effect.

That brings me to a third way in which generative grammars — all the sorts, or at least very nearly all the sorts — are fundamentally different from human language competence. Humans generally have a greater receptive capacity than productive — much greater. Generative grammars, we are told, are neutral as between speaker and hearer. As it has worked out, however, generative grammars are rather easily adapted or interpreted to be productive grammars. So easily, indeed, that this fact has materially helped in the gradual shift of meaning of "generate" from that in *Syntactic Structures* to synonymy with 'produce'. Except in the most trivial cases, a "generative grammar", particularly a TG grammar, cannot be used as the basis for a parsing programme, and is only very indirect help, if any, to a human parser. It has been argued, of course, that interpreting grammars cannot possibly be written — and it has been so argued by those who simultaneously maintain

that a formal grammar can model human competence, and is hence our best avenue to understanding the human mind. I would, myself, of course, reject both arguments; but certainly any linguist interested in maintaining basic intellectual consistency would have to reject one or the other.

We had a short period when it was maintained that humans performed analysis by synthesis, that they understood sentences because they could produce matches. It may be, I throw it out only as a suggestion, that the truth is the opposite. Humans produce sentences in a way that permits interpretation; interpretation is primary, and controlling, production secondary and determined.

But in any case, there is at least as much market for interpreting grammars as there is for producing. That is, for tools to assist the human interpreter, largely. Any careful market survey will show that. And it will show that the undeveloped potential market is largely of the same sort. If we don't know how to meet that need, we ought to mount an intensive R&D effort, and soon!

But that is not all that even a cursory market survey will tell us. Just what I have outlined as the responsibility of linguistics to the investigation of the mind will indicate what is needed. There were, you remember, two major components: the ordering of our portion of the data, and the provision of tools for ourselves and, especially, others. The data to be ordered is largely texts — samples of language actually used — or portions of texts. The material on which the tool-grammars are to be used is largely texts, fragments of texts, or simulations of texts. The inevitable conclusion is that grammars should be primarily text-oriented.

This is, of course, by no means a radical suggestion; it is in essential continuity with linguistics through most of its history. Paṇini's grammar was developed to assist in the correct reading and interpretation of the Vedic texts, and other ancient grammatical traditions have similar rootages.

The tradition has been slandered recently by persons who have never understood what is meant by text or corpus. A corpus is not, and with very rare aberrations never has been, the object of description. Bloomfieldians, in particular, did not describe corpora. Indeed, one of their complaints about the Firthians was that the latter stuck too close to their corpus. —Note they did not accuse them of describing a corpus, only of sticking too close. Rather a corpus is a sample. Like most empiric disciplines, linguistics does not and cannot, contemplate its object directly. It must do so through a sample. Part of the art is assuring that the sample will be properly representative. Or, if that is not possible, understanding its limitations and the probable resulting limitations on the grammar produced. Linguists are interested in any given text only because it is a promising component of a proper sample.

Therein lie the roots of one of the misunderstandings which have plagued linguists. Philologists — I use the term broadly — select texts for study on the basis of specific, individual qualities, at least when they have a choice. A literary work is presumed to be, in some way, memorable. The philologist observes the linguist cheerfully gathering up material that seems to be the merest junk, trite statements on vacuous matters, produced as likely as not with little thought and no semblance of effort to be artistic. On the other hand, the linguist seems too often to studiously avoid material that is readily available and of much greater merit.

As is often the case, the misunderstanding roots in narrownesses on both sides. The linguist's sampling has not been understood. Yet for a grammar to be useful, even, say, to an English literary critic, it must be based on a broad sample, including the banal and the prosaic. But for his part, the linguist has tended to shy away from

literature of the sort that the philologist cherishes. This of course can produce an imbalance just as serious as would the omission of the ordinary.

There is sometimes a justification. One can maintain — and I would — that *Finnegan's Wake* should be excluded, because it does not contribute anything to a sample of *normal* English. Joyce was deliberately distorting the language. But no such argument will hold, say, for the poetry of Gerald Manley Hopkins. By every test that I can trust, that is normal English. That fact does not demand that I take his work, or any part of it, into my corpus, but it does demand that I see to it that my corpus is representative of a whole that includes his work. No grammar of English is justifiably called that if it does not. It might be a grammar of popular colloquial English, or of some other limited form — provided only that it is based on an adequate sampling of that form.

Except, surprisingly enough, that if a grammar should be really based on a true sample of "ordinary English" it would probably cover Hopkins' usages as well. The "man in the street" uses all the devices that someone like Hopkins uses. He doesn't use them as skillfully, far from it; but they are all there. One of the reasons that most of us like to read Hopkins — and I use him simply as an example standing for many others — is that we enjoy his skillful use of the familiar stuff, his accomplishments in an art that we too practice, however crudely.

The "ordinary English" of the linguist is, in reality, a counterfeit, a delusion. It rests on misconceptions about language. But chiefly it rests on our reliance on elicitation, even elicitation of the most unreliable sort, self-elicitation. With our best field-work techniques — and surprisingly often we are content with less than the best we know — with our best techniques we get an anemic sort of language. The communication mechanisms are idling. The motor is turning over, but nothing is being done. There has been a great deal written recently about the disintegration of language as it dies — as it ceases first to be used in any significant communication situation and then dwindles wasting away internally as it does externally. Elicited language is, in many regards, just at the first stages of this process.

The most realistic grammatical investigation uses elicited material only as a stop-gap, and then only with great precautions, or as a minor supplement to texts, elucidating the latter rather than standing on its own.

The primary basis of our research should always be texts, samples of speech or writing as it is actually used, guaranteed to be such because it has been observed in actual use. It is here that grammar — our subject matter — can be seen at its fullest and best. Grammars — our products — that have been extrapolated from observations of patterning in texts can be useful approximations to descriptions of the patterning in all potential texts, and only such can be. Thus such grammars can be a fit tool for anyone who must deal with texts in actual use, and that includes a broad spectrum of people both inside and outside academia. And, for the same reason, such grammars are succinct summarizations of the data which it is the grammarian's responsibility — and privilege — to gather, to order, and to pass on, into the broad, cooperative, continuing investigation of the nature and being of humankind, and, particularly, of humanity's most special endowment, the mind.



INAUGURAL ADDRESS



ON THE AIMS OF LINGUISTICS

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From time to time linguists wonder what linguistics is and where it is going, or where it ought to be going, and what it is good for. Now, as we close a turbulent decade in our discipline and open another, at a time of widespread confusion and lack of consensus on even the most basic questions in linguistic theory, it may be a good time to look into such questions once again. But I hope no one is expecting me to say anything conclusive or profound on this subject; by its nature it does not lend itself to conclusive answers.

Back in the days when I was a graduate student, linguists would commonly say, upon looking into the question of what linguistics is and finding themselves unable to come up with anything better, that linguistics is what linguists do. To say that the business of linguistics is the study of language would clearly be unsatisfactory in at least two ways: First, because linguistics concentrates only on some aspects of language. Second, because several other disciplines are also concerned with studying language--language departments are, after all, even called language departments. Language study is also important in anthropology, cognitive psychology, and psychiatry, not to mention still other fields. This jurisdictional situation has become even more complex in recent years, not only with the increasing role of language study in such fields as psychology and sociology, but with the emergence of a whole new discipline which is devoting more and more attention to the study of language--the discipline of computer science.

Another view of linguistics that was also rather prevalent during my graduate student days has now become quite decidedly a minority view. It can be briefly characterized in three parts: (1) The purpose of engaging in linguistic theory, if indeed that should be done at all, is to facilitate the job of describing languages. (2) The purpose of describing languages is to provide the data that can be used in

comparative linguistics. (3) The reason for doing comparative linguistics is to classify the languages of the world. Here the term 'classify' refers of course to genetic classification, and the fact that typological classification is largely ignored by this view of linguistics is one indication of its narrowness.

To indulge in another bit of reminiscing, I remember well the annual meeting of the Linguistic Society of America twenty years ago in Hartford, Connecticut. The presidential address that year was given by George Trager, and his topic was "Linguistics is Linguistics". (Very interesting by the way, as a text for semantic analysis--too naive a theory will miss the point completely.) The content of the address, as it turned out, developed into a presentation of the latest version of the Trager-Smith theory of language, garnished with a large number of newly derived Greek terms that had been devised with the help of a graduate student in Greek who had been hired as a research assistant for that purpose. Such was the linguistics of 20 years ago. But actually I do not think that the direction Trager's address took was irrelevant to his announced topic. The reason will perhaps become apparent as I continue.

Now, what am I inquiring into--the aims of linguistics (my title) or what linguistics is? The answer is, both, since it turns out that these two questions are very nearly inseparable.

Continuing with another view from the past, there are no doubt many here in this group who have heard it said by one of the most prominent linguists of our day that linguistics is merely a branch of cognitive psychology. Few there are here, I think, who agree with that narrow view. And in fact the extent of our disagreement with that view, though it is held by many considered to be in the mainstream of linguistics, is an indication of the prevailing diversity of opinion on the questions of what linguistics ought to be doing and why.

Two other views that have been seriously maintained are: (1) The job of linguistics is to define language. (2) The job of linguistics is the study of texts. Again, both are too narrow.

I would now like to run through a list of areas to which the findings or methods of linguistics have something to contribute. It is convenient to divide

the list into two categories on the basis of "pure science" as opposed to "applied science", but I don't think that distinction should be taken too seriously. The more one looks into it the more one is likely to find the boundary difficult to define. And perhaps ultimately giving up comes closer to the truth than giving credence to some artificial criterion. Those who think of themselves as pure (as opposite to applied) scientists are probably more inclined to give more credence to the boundary; they claim to be engaged purely in the pursuit of knowledge, without regard to whatever applications may or may not result. I used to think that I myself was such a person. By contrast, others, according to a widespread way of categorizing, are thought to study some topic such as language with a view of learning something useful whose usefulness has been motivated from outside the field itself.

If we look at this distinction a little more closely we see that the other areas to which linguistics can contribute are in turn divisible into two kinds: (1) areas of more or less "pure" science and (2) applications areas. For example the pursuit of genetic classification of languages, generally thought of as pure science, has application to the study of prehistory. This is an instance of application to another discipline of "pure" science. By contrast, the study of linguistic structure has application to language teaching, and just about everyone will agree that we are here talking about applied linguistics, although I am not sure that we can say precisely why.

So we have a three-way distinction: Starting with the most applied, that area in which we get our hands dirtiest we have what we might call (1) the "dirty applied", such as application of linguistics to language teaching; (2) the "clean applied", covering the applications to areas of pure science, such as prehistory; (3) and finally "pure" linguistics (if there is such a thing)--the pure pursuit of knowledge of language for its own sake. Let us first look at other areas of "pure" science and scholarship.

We can begin with psychology as a friendly gesture to those of our colleagues who think that this is the only field worth mentioning. Here we have cognitive linguistics, the area of linguistics that is most closely related to cognitive psychology and cognitive anthropology--related to but not to be equated with neurolinguistics, which relates more closely to the neurophysiological "hardware" and thus to neurophysiology. We may say that the aim of cognitive

linguistics is to shed light on cognitive structures and processes while that of neurolinguistics is to shed light on neurological structures and their physiology as well as to apply findings from neuropsychology to cognitive linguistics.

To use the label 'cognitive linguistics' is of course to imply that the linguistic endeavors which relate to cognitive psychology constitute only one branch of linguistics, not the whole thing.

Moving on, we can mention other fields of social science. We have sociology and the area of sociolinguistics, an increasingly large and complex area which intersects with sociology in various ways. Sociolinguistics has grown rapidly during the past decade, and the growth still appears to be vigorous.

Psychology is not the only field to which linguistics has been assigned as a branch. Another is anthropology. And the possible contributions of linguistics to anthropology have been recognized as including not only findings but also methods. And one new area in anthropology has been particularly influenced by linguistic methods and concepts, as practiced by investigators with solid training in both linguistics and anthropology. This is the area of Cognitive Anthropology (cf. especially Tyler 1969 and references there). At the risk of oversimplifying we may say that the job of cultural anthropology is to describe, classify, and somehow account for cultures, while that of cognitive anthropology is to explore the cognitive structures and processes which underly the phenomena of culture.

All of these fields, cognitive psychology, cognitive anthropology, cognitive linguistics, cultural anthropology, sociology, sociolinguistics, etc. are of course interwoven, and it is impossible to find boundaries which separate them from one another. The metaphor of academic fields to geographic territories loses its appropriateness when we look closely. This merging of one field into another is particularly striking if we look at the relationship between semantic structure and culture, or at a different level, that between cognitive semantics and cognitive anthropology. If we are to make a distinction it has to be on the basis that the structure of the culture of a society is different from the semantic structure of that society--or, at the cognitive level, that a person's knowledge of his culture is not the same thing as his

knowledge of the semantic structure of his language. But these come close to being the same, since their area of overlap is so large. Perhaps the main difference between cognitive anthropology and cognitive semantics as these fields are practiced is that the former is done in departments of anthropology while the latter is done (as yet by a very few people) in departments of linguistics.

Another area of social science already mentioned is prehistory, and we have known since the days of our various respective introductory courses in linguistics that comparative linguistics can shed light upon prehistory in ways that are quite surprising to the uninitiated.

Still another area in which findings of linguistics can be useful is that of artificial intelligence, a branch of computer science closely related to cognitive psychology. As this field has developed during recent years it has paid more and more attention to language, to the point that it may now be accurate to say that natural language processing is more important than any other topic in the area as measured by man-hours of study or volume of publication or software produced. And although the fields of linguistics and artificial intelligence have much to contribute to each other, there has been rather little interaction in recent years. Linguists would do well to pay more attention to what is going on in computer science. Thus the systems for understanding discourse, the structures and processes which make it possible for you to understand what I am saying, for example, are being more intensively investigated in computer science departments and in laboratories in the computer industry than in linguistics departments, even though this area is logically a major concern of cognitive linguistics.

As we look at how linguistics relates to the social sciences we begin to wonder if there is any part of social science to which linguistics can not contribute. We have not mentioned political science and economics. What about these areas? I maintain that linguistics has much to contribute to political science, simply because the primary medium of politics is language; but this is a potential that has remained undeveloped. In a course I will be teaching this Fall here at Rice I plan to explore the interaction of semantic structure and thought processes, with some attention to common errors in everyday reasoning. I anticipate that the political campaign will provide plenty of material for analysis.

What about economics? Since I am not intending to give an exhaustive treatment of my topic anyway, I leave this as an open question.

Let us now turn from the social sciences to the humanities. Twenty years ago there was a great gulf, or so it appeared, between linguistics and most of the humanistic disciplines. That gap has now narrowed quite dramatically as linguistics has explored more and more intensively in the areas of syntax, semantics, and discourse, so that boundaries no longer exist to separate linguistics from poetics, rhetoric, and the study of literature in general.

And then there is another area which defies placement in traditional academic categories--that of animal communication. We may include here not only the study of naturally occurring communication systems, such as that of the bees, but also, of greater general interest during recent years, the area of linguistic engineering which involves developing new communication systems for chimpanzees and dolphins. The work with dolphins is as yet in its infancy, that with chimpanzees in its early childhood.

Two other areas loom large, but I would like to defer their treatment until after we quickly run through a list of areas of applied linguistics. These two areas are philosophy and semiotics. We must also return later to the area of "pure" linguistics.

Let us, then, continue with a list of areas of applied linguistics--again not intended to be complete. The knowledge that linguistics provides, or can provide, can be applied in:

- (1) Translation--including machine translation;
- (2) Foreign language teaching;
- (3) Teaching the effective use of the native language--the various language arts and skills;
- (4) Speech therapy;
- (5) Psychiatry; e.g., analyzing the speech of schizophrenics;
- (6) Electronic Data Processing ("EDP").

This last area--EDP--is already vast and complex, despite its youth. Of particular interest nowadays is a large amount of effort going on in the area of

automatic speech recognition, speech synthesis, and man-machine communication via written language--for example man-to-machine communication by typing information on a keyboard; and machine-to-man communication by text displayed on a CRT. And here we have a very interesting area of language engineering. At first glance it may seem that the most friendly computer would be that which would understand ordinary English as typed on the keyboard. But in fact it takes people too long to type in a whole sentence to tell the machine to execute, say, some editing operation upon a text being prepared for publication; it's much easier to just key in one or two words, or even one or two characters. Most computer users would rather do a little new language learning in order to save strokes on the keyboard than to give their instructions in ordinary English. So we have a problem in language engineering--to design communication systems that are close to English and as easy to learn as possible while as easy as possible to interface to the machine in the particular communication environment defined by keyboard and CRT.

Another aspect of EDP concerns the development of electronic hardware to facilitate information processing. As many of you know, I have recently been working on a new type of computer memory which was inspired by the relational network theory of linguistic structure (Lamb 1978). That effort amounts to the only project I know of so far involving development of electronic hardware under the influence of linguistics, but further developments could occur in the direction of designing computers whose operation more closely resembles that of the human brain. This prospect is an exciting challenge in a new kind of semiotic engineering.

This brings us, finally, to the three areas I personally find most interesting:

- (1) Pure linguistics
- (2) Semiotics
- (3) Philosophy
 - (a) Epistemology
 - (b) Logic and the art of reasoning

We shall see that the first of these three, properly considered, leads almost automatically to the other two.

The question of pure linguistics is paradoxical. On the one hand it can be argued that there is no such thing. On the other, it can be argued that our field will never be able to get its act together unless it develops a pure linguistics.

The first argument runs like this: Nobody ever really pursues the study of language without some application in mind, even though that application may only be at the back of the mind or subconscious. Those who may claim to have gone into linguistics purely out of curiosity about language could probably always be found to have some hidden application present, if means for the discovery of such hidden applications could be brought into use. Thus it may be, for some linguists, that some traumatic experience or series of experiences occurred at around age three, when they were devoting much time and effort to learning their native language, so that they became fixated on one or more aspects of language learning or linguistic structure. Or, if one looks at the writings of some linguists one is led to guess that they may have gone into linguistics because they knew at some level that they have trouble communicating!

If the "hidden application" hypothesis applies to all cases of supposedly pure linguistics, we have the conclusion that all linguistics is applied linguistics.

Now let us look at a contrary line of reasoning; and here I turn to one of the great figures of linguistics, Louis Hjelmslev, and the thoughts he developed in his brilliant "Prolegomena to a Theory of Language" (1961). I hope that those of you who have read this book will not mind if I review some of its contents.

Hjelmslev begins by observing that all (or most) of the linguistics up to his time had been, as he called it, transcendent. In his terminology, transcendent linguistics is the study of language not to learn about language itself but to learn about something else. The real object of curiosity goes beyond--that is, transcends--language. The alternative to this type of study he calls immanent linguistics, and he considers that it would be so different from, and so important to distinguish from, ordinary linguistics, that he proposed for it the new name glossematics.

Now immanent linguistics differs from transcendent linguistics in one other very important respect: its foundations, too, lie within linguistics itself rather than outside. By contrast, the foundations of

various kinds of transcendent linguistics rest upon some other field. For example, those who believe that a phonology must rest upon phonetic universals obtained from outside linguistics, e.g. from physiology, or those who believe that semantics must be based upon natural science, as did Bloomfield (1933), are engaging in transcendent linguistics. Another excellent example is provided by Bloomfield's *Postulates for a Science of Language* (1926), which would have the fundamental concepts of linguistics rest upon, for example, the sociologically defined speech community.

Those who have criticized Hjelmslev on the grounds that he ignores what lies outside the linguistic structure seem not to have read beyond the first few pages of his *Prolegomena*. After setting forth his objections to transcendent linguistics he goes on to develop the outlines of an immanent linguistic theory--not, I believe, the only possible one or even the best one, but none the less a worthy attempt. And having done so, he shows that the methods and concepts he develops can be extended to other systems not generally considered to be languages--and in fact differing in important properties from languages while sharing other properties. The systems of this larger class which has language at its center he calls semiotics. That is, a semiotic is a quasi-language which can be illuminated by the methods developed in immanent linguistics. And it turns out that every science is a semiotic. The plausibility of this conclusion is apparent even without reading Hjelmslev if we simply consider that every science is using language and language-based notation systems to organize and manipulate its data and findings.

It thus turns out that, far from being isolated from the rest of science, immanent linguistics naturally relates to all other sciences and in fact stands at the very center of them all. The conclusion of this line of reasoning is stated quite elegantly by Hjelmslev as follows (p. 127):

"Linguistic theory here takes up in an undreamed-of way and in undreamed-of measure the duties that it imposed on itself. In its point of departure linguistic theory was established as immanent, with constancy, system, and internal function as its sole aims, to the apparent cost of fluctuation and nuance, life and concrete physical and phenomenological reality. A temporary restriction of the field

of vision was the price that had to be paid to elicit from language itself its secret. But precisely through that immanent point of view and by virtue of it, language itself returns the price that it demanded. In a higher sense than in linguistics till now, language has again become a key position in knowledge. Instead of hindering transcendence, immanence has given it a new and better basis; immanence and transcendence are joined in a higher unity on the basis of immanence. Linguistic theory is led by an inner necessity to recognize not merely the linguistic system, in its schema and in its usage, in its totality and in its individuality, but also man and human society behind language, and all man's sphere of knowledge through language. At that point linguistic theory has reached its prescribed goal:

humanitas et universitas"

Thus we see that pure linguistics, properly conceived, leads quite naturally to semiotics and to all the various applications of linguistics, and as it does the boundary between the pure and the applied becomes unimportant, while the relevance of theoretical linguistics to other fields becomes increasingly important.

For Semiotics as well as for Cognitive Psychology and Cognitive Anthropology, the great, as yet largely undeveloped, potential of linguistics comes more from its methods than from its factual findings about languages. When the investigator who is equipped with the concepts and methods of linguistics looks at systems other than languages--whether they be musical compositions, architectural structures such as buildings (cf. Preziosi 1979) and cities (cf. Alexander 1965), biological systems such as the hereditary information system, or products of Oriental philosophy such as the I Ching, he finds the same basic structural principles at work that were discovered and analyzed in natural languages. Even the structures which account for our visual and auditory perception and our knowledge of how to drive a car, ride a bicycle, or play the piano appear now to be amenable to treatment by techniques being developed in theoretical linguistics, although this is a potential that remains as yet unrealized. But let us consider this a call to action. Let us awaken this sleeping giant of relational network

analysis and turn it loose! There is no law that says it has to be confined to prepositions and verb phrases!

And as we do, particularly as we apply our tools to the human information system itself, we may find ourselves in the area of epistemology. Our conceptual systems, our systems for knowing and thinking, which current studies are showing to be not only amenable to analysis by linguistic methods but even to be included within the boundaries of the relational network of linguistic structure, intervene between ourselves and the real world which we believe to exist out there. When we think we are apprehending that real world we are actually operating directly only with our conceptual systems and only indirectly with that world. When we suppose that our thoughts are most free from extraneous influences, they are actually being formed--not just influenced--by our conceptual linguistic systems that have been built within us by our previous experience, education, conversations, and by the automatic workings and structural principles of the cognitive mechanisms.

As we learn more and more about the structure of this puzzling, beautiful, and complex human information system we may become better and better equipped to understand what that real world is really like.

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SPECIAL INVITED LECTURE



TEXT SEMANTICS AND CLAUSE GRAMMAR: SOME PATTERNS OF REALIZATION
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I

Thanks to the work of our predecessors, and especially perhaps to that of outstanding figures of mid-century linguistics such as Sapir and Whorf and Bloomfield and Firth and Hjelmslev, linguists of subsequent decades have been able to extend our concerns upwards and outwards, from the syllable, through the clause, to the text. The publications of this Association illustrate very clearly this extension of the horizons.

While broadening our vision in this way we have had to ensure that we do not lose sight of the syllable when we attend to the clause, nor of the clause when we attend to the text. Being a linguist means keeping all these things in focus at once: we are trained to do this both as observers, when we listen simultaneously to the meanings, the wordings and the sounds of speech, and as theorists, when we construct representations of language as simultaneously semantics, lexicogrammar and phonology. But it is not always easy to maintain this multiple focus, because each shift of attention involves a shift in two directions, a knight's move that is a move both upwards and outwards. This same two-dimensional relationship was described by Hockett many years ago in a paper called 'Linguistic elements and their relations' (Hockett 1961), in which he discussed the different statuses of morpheme and phoneme and contrasted the two possible pathways between them.

A clause, that is to say, is not only bigger than a syllable; it is an entity of a different kind, at another level of abstraction. And it is this second relationship, that of realization, or coding, that is the critical one; the size distinction is typically associated with it, but not obligatory -- there can be a clause encoded as a single syllable. It took a surprisingly long time to clarify this two-dimensional relationship, and to accept that the relation of syllable to clause (or of phoneme to morpheme) was not simply one of part to whole, although it should have been fairly obvious seeing that the two are separated by the Saussurean line of arbitrariness. It is much harder to establish that a similar shift along two dimensions separates the clause from the text. A text is likewise -- typically but not necessarily -- bigger than

a clause. But it is also, and more importantly, of a different level of abstraction. A text is a semantic entity rather than a formal, lexicogrammatical one; and this distinction is less easy to draw, because between the semantics and the grammar there is no such line of arbitrariness. (I shall return to this point below.)

There is a problem in discussing text, if only because a text can be such a large object: every example takes up a great deal of space. One solution to this is to write rules for generating text but never actually to generate any. Another is that once suggested by Peter Wexler when he proposed to introduce a talk with the words 'This paper is about the language of this paper', so making the same entity serve both as text and as metatext. I have usually approached the problem in a different way, by using text that is so familiar that the audience can supply the missing parts for themselves, like Mother Goose or Alice in Wonderland. We need to face up to it somehow or other; there is something discouraging about a publication where the author is insisting on the importance of context but cites nothing longer than a decontextualized clause.

When text is discussed in this way, with reference made only to isolated clauses, it is perhaps being assumed that the relation of clause of text is simply one of constituency. If a text is the same kind of thing as a clause only bigger, we can reasonably use clauses as instances while making observations about text. And perhaps this approach to text in turn reflects a presemantic view of language, in which it is assumed that the linguistic system is no more than grammar and phonology; so a text must be a grammatical unit, something that consists of clauses in the same way that a clause consists of words.

Since there is no line of arbitrariness between semantics and grammar, this view is plausible. It is natural to think of text in the sense of the wordings that realize it. But it does cause some problems. The relations between the parts of a text are not such that we can set up structures whose exponents will be clause-like entities. The elements of structure of the text are more abstract; they are functional entities relating to the context of situation of the text, to its generic properties in terms of field, tenor and mode. It is not easy to explain the nature of a text if we treat a text as if it was a macrosentence, just as it was not easy to explain the nature of a sentence when a sentence was treated as if it was a macrophoneme.

I am saying this at some length (despite the fact that I have said it often enough before) because I am now going on to say the opposite, or at least what will at first sight appear to be the

opposite. Having insisted that a text is NOT like a clause, I now intend to suggest that it is. It is not that I have changed my mind on the issue. The point is rather that, once we have established that texts and clauses are of different natures, the one being lexicogrammatical (a construct of wording) the other semantic (a construct of meaning), we can then go on to note that there are several important and interesting respects in which the two are alike. But the likeness is of an analogic kind; it is a metaphorical likeness, not the kind of likeness there is between, say, a clause and a word. Starting from Hockett's diagram, where one axis stands for constituency and the other for realization, we can link text to clause along the diagonal; the relationship between them is there but it is an oblique one, and this determines the kind of likeness we can expect to find.

We shall be able to explore the relationship more thoroughly by starting from a functional interpretation of the clause; so it may be helpful to comment first on functional theories of language. Functional theories of language came originally from outside linguistics; the consequence was that they were only theories of the text -- they had nothing to say about the system. According to such a theory, any piece of text can be assigned a particular function, in the sense that it is oriented, exclusively or at least predominantly, towards some communicative purpose. The unit that is described in this way may be a very small piece of text, realized as one clause (the functions are then 'functions of the utterance'); or it may be a larger piece constituting a recognizable semiotic event. The best-known functional schemata are two dating from around 1930, the ethnographic one of Malinowski (1935) and the psychological one of Karl Bühler (1934). Bühler's scheme is interesting because although extralinguistic in intent it is one that is explicitly derived from language -- that is, from the linguistic system -- in the first place: his tripartite framework of expressive, conative and representational functions denotes text that is oriented, respectively, towards speaker, addressee, and the rest of the universe -- in other words the first person, second person and third person categories of the Indo-European verb. This is similar to the way in which various logical relations originally derived from natural language have been transformed into non-linguistic relations and then turned back on to language as explanations of linguistic forms.

The interest of such functional schemata for the linguist is that the functions arrived at are not in fact simply functions of the text. If they were, they would be of limited concern; but they are more than this -- they are functions that are built in to language as the fundamental organizing principle of the linguistic system. We shall not be surprised at this, if we take

a Hjelmslevian view of language as system and process: if we accept that language and text are one and the same thing, and that the system evolved as a means of serving human intentions through the creating of text. It is only if we set up artificial dichotomies like langue and parole, or competence and performance, that we are surprised when a system displays properties relating it to its use. Now, despite the divergencies that separate Bühler's and Malinowski's functional theories, from each other and from various subsequent schemata, divergencies that are a natural consequence of the different purposes for which they were devised (ethnographic, psychological, ethological, educational etc.), there is one feature that strikes us as common to all of them. They all share in the fundamental opposition of action and reflection, the distinction between language as a means of doing and language as a means of thinking. The former is Bühler's first and second person function, Malinowski's active function; the latter is Bühler's third person function, Malinowski's narrative function. And this opposition is incorporated into the semantics of natural languages, in the form of what I have referred to as the 'interpersonal' and 'ideational' components. (The distinction between first and second person language is however not a systematic one; the two are simply different angles on the same interpersonality.) For all human beings, in all social groups, the environment in which they live has these two validations: it is something to be acted on, turned into food or shelter or other needs; and it is something to be thought about, researched and understood. Language has evolved to serve both these elementary functions. The reflective mode is coded directly as the ideational element in the semantic system. But since language is symbolic, one who speaks does not act on reality directly but only through the intermediary of a listener. Hence the active mode, when translated into a network of semantic systems, comes to be coded as interpersonal.

While these two functions are given to language from the outside, as it were, by its role in human situations, in order to fulfil such roles a language has to have a third semantic component, whereby it is enabled to latch on to those situations in a systematic way. There must be a relevance function, a system of meaning potential which allows a text to cohere with its environment, both the non-linguistic environment and that part of the environment which consists of what has been said before. So there is a third component in the semantics of natural language which only an immanent linguistics will discover, since it has no transcendent motivation; this is the contextualizing function -- or the 'textual' function, as I have called it, because it is what makes text text, what enables language to be operational in culturally meaningful environments.

Now a clause is a complex realization of all these three semantic functions. It has an ideational component, based on transitivity, the processes participants and circumstantial elements that make up the semantics of the real world, and including the onomastic systems that classify these into nameables of various kinds. It has an interpersonal component, consisting of mood, modality, person, key and all the various attitudinal motifs that come to be organized as meaningful alternatives. And it has a textual component, the 'functional sentence perspective' (thematic and news-giving systems) and the cohesive resources of reference, ellipsis and conjunction. Each of these components makes its contribution to the total make-up of the clause. What we identify as a clause is the product of functional-semantic processes of these three kinds.

But what is the nature of the contribution, in each case? We are accustomed to thinking of this in structural terms: that each semantic component generates its own particular tree, a configuration of parts each having a distinct function with respect to the organic whole. The ideational component generates 'actor-action-goal'-type structures: configurations of process, medium, agent, beneficiary, range, extent, location, manner, cause and so on. The interpersonal component generates so-called 'modal-propositional' structures: configurations of subject, finite, modality, predicator, complement and adjunct. And the textual component generates thematic and informational structures, configurations of theme and rheme, and given and new; as well as cohesive elements of a non-configurational kind.

We can represent all these in structural terms, using the linguist's traditional notion of structure: the simplest of all possible forms of organization, that of parts into wholes. Because this notion of constituent structure is so simple, it is natural that a linguist should want to do as much as possible with it. And it can be made to do quite a lot. But there comes a point where it ceases to be appropriate; where moulding the facts so that they fit the notion of constituency will distort them rather than just simplifying them. With a multifunctional interpretation of the clause we reach this point.

The contributions that are made by the three functional-semantic components to the form of the clause are of three rather different kinds. As far as the ideational systems are concerned, these do tend to generate part-whole structures; they are realized by organic configurations which themselves, and whose constituents, are reasonably clearly bounded, such that it can be specified where one clause element leaves off and the next one starts. But this is not nearly so true of interpersonal systems. Interpersonal systems tend to generate prosodic

patterns that run all the way through the clause: not only intonation contours, though these provide a clear instance, but also reiterations of various kinds like those that are typical of modality in English, e.g. surely...can't...possibly...can...d'you think in:

Surely they can't possibly be serious about it can they d'you think?

Textual systems generate patterns that differ from both of these, culminative patterns formed by peaks of prominence; and since these peaks typically appear at the beginning or the end of the clause, where there is a sequence of clauses they result in a kind of periodicity, a movement from a clause-initial peak via an off-peak medial state to a clause-final peak which is then sustained to form the initial peak of the succeeding clause. Thus a clause is at one and the same time particle, field, and wave, as Pike suggested more than twenty years ago (Pike 1959), although the details of this interpretation are not quite the same as those worked out by Pike.

Now, the significance of this step in our interpretation lies not only in establishing that these three distinct patterns of realization go to make up the English clause, but also in the fact that they appear to be non-arbitrary; this is clearly important when we come to ask whether such tendencies are found in every language. The grammar of languages is a natural grammar; as I expressed it earlier, there is no line of arbitrariness between semantics and grammar as there is between grammar and phonology. If the clause is at once particle, field and wave this is because the meanings it has to express have different semiotic contours, to which these three realizational forms correspond in a natural, non-arbitrary way.

The particulate nature of ideational structures reflects the relative discreteness of the phenomena of our experience. Consider cow eat grass: we know where the cow begins and ends, what eating is and is not, which part of reality consists of grass and which part consists of other things. Many of our perceptions are schematized into entities that are bounded in this way, and the constituent-like form of the wording reflects this fact: the word cow has an outline because the object cow has an outline. Of course not all experience is like this; indeed I have always tended to emphasize the unboundedness of many phenomena, the indeterminacy and the flux; and I share Whorf's view that language itself, once it has been constituted in this way, strongly influences the forms that our perceptions take. Nevertheless there is a basic fit between the discreteness of words and the discreteness of things; otherwise we should not be

able to talk about the things at all, or explain contrastively those instances where the fit of words to things is less than perfect.

By contrast, the interpersonal kind of meaning is a motif that runs throughout the clause; and this is represented by lexicogrammatical or phonological motifs that are likewise strung unboundedly throughout. The speaker's attitudes and assessments; his judgments of validity and probability; his choice of speech function, the mode of exchange in dialogue -- such things are not discrete elements that belong at some particular juncture, but semantic features that inform continuous stretches of discourse. It is natural that they should be realized not segmentally but prosodically, by structures (if that term is still appropriate) that are not particulate but field-like. The linguist's tree is an inappropriate construct for representing structures of this kind.

Thirdly, the undulatory movement by which textual meanings are encoded in the English clause may again be in some sense a natural form for their representation. All the patterns I have been discussing vary from language to language, as is very obvious; those of English merely provide one specific instance of something that seems to be a general tendency in the expression of meanings of each kind. The English clause, as a message, is a movement from prominence to prominence, a diminuendo that is then picked up and becomes a crescendo; but the prominence is of two different kinds. It is a movement away from a Theme, to something that we can characterize as non-Theme; that is the diminuendo aspect. It is a movement towards a New, from something that we can characterize as non-New; that is the crescendo aspect. But Theme is not the same as non-New, nor is New the same as non-Theme; there are two movements here, not one. Their relationship is less automatic than the above formulation implies, and they can be combined in other ways besides; what is described here is just the unmarked, typical form. The essential point is that the two types of prominence differ; and that they differ as speaker to listener. The Theme is speaker-oriented prominence: it is 'what I am on about' (grammarians used to call it the psychological subject). The New is hearer-oriented prominence: it is 'what I present as news to you'. The English clause is textured by this shift in its orientation, from speaker-prominence to listener-prominence. Each clause is in this sense a kind of gift, one move in an exchange, symbolized by the change of perspective from me to you. So when Alice says

it turned into a pig

in answer to the Cheshire Cat's question What became of the baby?, she begins with the Theme it ('I'm going to tell you about something') and ends with the New a pig ('here's what is news to you'). In this case, Alice has obligingly chosen as her Theme the thing that the Cat had asked her about, namely the baby, realized by the anaphoric reference item it; and she has kept the news, its change of state, till last. Alice is being helpful, keeping the wave pattern of the dialogue in phase. But she need not do this; the Theme is the speaker's choice, and in any case there is not always a readymade candidate for thematic status. Compare the following instance:

"How am I to get in?" Alice repeated, aloud.

"I shall sit here," the Footman remarked, "till to-morrow --"

The Footman, just like the rest of us, favours himself as an unmarked Theme.

So the patterns of wording in the clause, which is the basic unit of lexicogrammatical organization, display a variation that derives from the different kinds of meaning they express; and the structural shape is in each case a natural product of the semantic functions. A functional grammar is an interpretation of the primary semiotic purposes that language has evolved to serve, and of the different ways in which meanings relating to these different purposes tend to be encoded (and the patterns just described are only tendencies). When we go on to observe the developmental processes whereby young children construct their language, we gain a further insight into the steps by which grammar may have evolved on the way towards its present form.

II

Since the functions that we have called ideational, interpersonal and textual are components of the semantic system, and since a text is a semantic unit, it follows that these components will be present in the text just as they are in the lexicogrammatical entities, the wordings, by which the text is realized. In this sense, then, a clause is bound to be like a text: it originates in the same meaning potential. But to say this is to say no more than that both derive from the linguistic system -- a point that is perhaps worth making, since text is still sometimes treated as if it had no source of its existence in language, but is nevertheless not saying a very great deal. The problem to be solved is how features from these semantic components are represented, on the one hand in clauses and on the other hand in texts, and with what kind of systematic relationship between the two, such that the clause can function as the principal medium through which meanings of such different kinds, and differing domains, are coded into an expressible form.

In this latter half of the paper I will suggest two different facets of the clause-to-text analogy, which correspond to the two axes of the relationship of clause to text that I referred to earlier: their relationship in size, and their relationship in abstraction. To go from text to clause involves a move along the axes both of composition (constituency) and of realization. I shall consider the size dimension first.

A. Do we find, extending over a whole text, patterns that are like those we find in the clause? Let us take each of the three functional components in turn.

1. Ideational. Like a clause, a text has an ideational structure, with something of the same particulate kind of organization: it is possible to recognize functional constituents of a text, always allowing (as in the clause) for some variation in sequence and a certain amount of overlapping. These structural elements have been identified most clearly, perhaps, in narrative; and the researches of Pike, Longacre and their co-workers on the one hand, and of Gleason and his colleagues on the other, have provided a rich body of empirical findings about the structure of narrative in languages and cultures from every continent. Other genres have been less thoroughly studied. An early example of the structural interpretation of transactional discourse is Mitchell's (1957/1975) 'Language of buying and selling in Cyrenaica: a situational statement'; Mitchell refers to the structural elements of the text as 'stages' and identifies, for one type of situation:

Salutation Enquiry Investigation Bargaining Conclusion

Sinclair and Coulthard (1975), in their study of the structure of classroom discourse, set up a rank scale, a hierarchy of constituents each with its own configuration of functional elements. Ruqaiya Hasan (1979) considers that this structural organization is a general feature of texts of all genres; in her studies of transactional discourse she recognizes optional and obligatory elements, variations in sequence, recursive options and the like, all of which make the text structure look rather similar to the ideational structure that is characteristic of the clause. We can sum this up by saying that, in at least some genres, and perhaps in all, a text is a configuration of functional elements, collectively representing some complex construct of experience and typically realized as discrete, bounded constituents in a partially determinate sequence.

Within the ideational component there is a category of conjunctive relations of the types of 'and, or, nor, viz, yet, so

then', which can be coded in a great variety of different ways. They appear in many forms within the clause and even within clause constituents; most typically, perhaps, they link clauses in a hypotactic or paratactic clause complex. But they also function as semantic links over longer passages of discourse. Martin (forthcoming) has interpreted these relations in a generalized system network and suggested how they may be accounted for as an aspect of the ideational structure of a text. (Appendix 1)

2. Interpersonal. A clause has an interpersonal pattern of organization, including a modal structure (mood, modality and key) which expresses its character as a speech event. In the same way a text has a unified character as a rhetorical event. In a recent study by Melrose (1979) the suggestion is made that a text or portion of a text derives its character from the type of process, in the transitivity system, that is predominant in it: material, including action, event, behaviour; mental, including perception, reaction, cognition; verbal; or relational, including attributive, equative, existential. This 'type of process' is of course an ideational category; but a clustering of processes of the same kind expresses the rhetorical design of the text rather in the same way that a particular complex of ideational features such as 'I am certain' or 'I want to know' functions as the interpersonal motif of a clause. The bridging concept in this case is the 'field of discourse', which is the aspect of the context of situation of a text by which the transitivity selections in it tend to be mainly determined (Halliday 1977); the 'field' is defined as the nature of the social action in which the text is playing some part, and this naturally limits the range of possible parts that are open to it to play. (Appendix 2)

3. Textual. That discourse displays some kind of a wave form, with peaks of prominence at both ends, has been a commonplace of rhetorical theory ever since it was first hypothesized that a text has a beginning, a middle and an end. (This is perhaps one of the few examples of a verifiable hypothesis in linguistics, though characteristically in order to be verified it has first to be trivialized.) The concept of the paragraph is based on the notion of culminatives, with terms such as initiating, introductory or topic sentence referring to movement downwards from a beginning, and terms such as culminating, summative or focal sentence referring to movement upwards to an end. The diminuendo-crescendo pattern we find in the clause is thus also present in the paragraph, and probably in other text units as well: a text can justifiably be thought of as a construct of waves within waves. And this nesting of wave-like structures one inside another is characteristic also of

lexicogrammatical organization: among the constituents of the clause in English, endocentric word groups (verbal groups and nominal groups) display this same kind of movement from speaker prominence to listener prominence. So when a linguist says to his editor I have been going to finish my three brilliant articles for you ever since the beginning of the year, the verbal group have been going to finish goes from the speaker-prominent deictic have, locating the process in speech time, to the listener-prominent lexical item finish, saying what the process actually is; and the nominal group my three brilliant articles likewise goes from a deictic my, locating the object in speaker space, to a lexical item articles, again giving the main piece of information. This is essentially the same complex movement as that from Theme to non-Theme and from non-New to New in the clause. So both text and clause can be seen to participate in a multilayered pattern of organization in which the movement has this same underlying periodicity repeated over structures of differing extent.

So much for what we might call the metonymic aspect of the relation of clause to text. Now we turn to the metaphorical: where the feature that we have identified in the clause is not being repeated on a larger canvas, as in the instances just considered, but rather is standing as the realization of something else that is a feature of the text. However, not only is it realizing a text feature, but also, given the naturalness of fit that we were able to establish between the grammar and the semantics, it has a similarity, in some transformed way, to the feature which it serves to realize.

B. 1. Ideational. Cohesion, as defined by Halliday & Hasan (1976), is the semantic resource through which textual coherence is realized. A text displays cohesion; and this cohesion is achieved by means of a variety of features of the clause, which serve to relate one clause to others that constitute its context. However, while cohesion is a necessary condition of textual coherence, it is not by itself sufficient to guarantee it; and in her subsequent studies Ruqaiya Hasan (in press) has been comparing pairs of texts, of similar nature and origin, where one is judged coherent and the other not, in order to establish what are the differences between them. She has one set of texts which are stories told by children; she has also examined texts from schizophrenic patients, including a pair of texts from one particular patient one when undergoing treatment and the other when the same patient was judged as having been cured. In each case all the texts display typical chains of identity or similarity, ongoing representations of some participant or some other element of the semantic structure -- a process, perhaps, or an attribute, or a complex concept of some

kind. Now, in the texts judged to be coherent, these lexicoreferential chains were systematically interrelated: a majority of the occurrences in any one chain were related to occurrences in some other chain. They were systematically related, that is to say, in the ideational structure of the clause; for example as agent to process, or attribute to carrier, or by their both having the same role with reference to some other element, such as both being carriers of the same attribute. In the texts that were judged to be non-coherent, on the other hand, although the proportion of lexicoreferential occurrences entering into cohesive chains was no less than in the coherent texts, only a minority of these occurrences were cross-related in this way; in general, the recurring elements ran alongside each other through the text but without intermingling to any extent. The coherence of the text appears to be the product of this 'interchaining'. If a text is coherent there is a movement of related particles through a succession of clauses, so that not only do the individual particles persist from one clause to another, but the structural configurations, though not remaining static, also preserve a recognizable continuity. Just as individual elements form a clause not as isolated entities but as roles in a structural configuration, so chains of elements form a text not as isolated chains but as role-chains in an ongoing configurational movement. (Appendix 3)

2. Interpersonal. How does one recognize the unique rhetorical flavour of a text? Partly at least from the overall pattern of interpersonal features of the individual clauses. A text has its own character as an intersubjective event, and this 'tenor of discourse' is manifested primarily through the cumulative force of the options taken up in the interpersonal systems of meaning. In Priestley's play *An Inspector Calls*, the underlying theme, or rather one of the underlying themes, is that of social responsibility: we are all members of one body. This confers obligations on all of us, each one towards others. In the course of the play these obligations are acted out -- or rather the consequences of their not being fulfilled are acted out -- through the step-by-step uncovering of a chain of irresponsibility, compounded by sheer chance and observed through a confusion of prejudices and doubts. Now, the three conceptual fields of probability, opinion and obligation together comprise the semantic raw material of the complex system of modality in the grammar of English. It is not surprising therefore that the underlying semiotic of the play is worked out metaphorically, at a critical point in the action, through the highlighting of modal selections within the clause, backed up by lexical choices from the same semantic fields. The clauses in this key passage, each with its own small momentum, combine to produce a powerful semantic movement, a motif first of chance and then of duty, both

hedged around by opinion, and culminating, after a narrative monologue serving as commentary, in a burst of direct assertion in which the modalities are finally swept away. As audience we respond to this movement even though the events which call it forth are in themselves trivial, no more than an argument over the identification of a photograph. Here the interpersonal features of the clause stand as a metaphor for the social semiotic of the text, as an exploration of the complex symbolic structures binding men to their fellow men. (Appendix 4)

3. Textual. The last two examples suggest that we can 'read off' significant aspects of the semiotic quality of a text from looking at the transitivity and modal features that predominate in the individual clauses. When we come to consider the rhetorical organization of a text, this too can be discovered from a reading of the clause patterns, in this case those having to do with functional sentence perspective: what are the elements that function predominantly as theme, and what are the elements that function predominantly as news. In his study of the thematic organization of discourse, Fries (forthcoming) has shown how these patterns realize the development of the paragraph. Examining a tightly constructed paragraph by Lytton Strachey, Fries found three lexicosemantic chains, one having to do with the opposition of wisdom and chance, one with the English constitution, and one with political apparatus in general; of the three, the former was overwhelmingly associated with initial position in the clause, the second with final position, while the third showed no particular pattern of distribution. Fries points out that this reflects the rhetorical interpretation of the paragraph as having the 'wisdom versus chance' motif as its method of development and the English constitution as its main point. Thus the 'mode of discourse' is manifested in the same cumulative manner by the ongoing selections, in each clause, from the thematic and informational systems, those comprising the 'textual' element in the meaning potential of the clause. (Appendix 5)

I am not suggesting, of course, that listeners and readers process text in a conscious manner, parsing each clause as they go along. On the contrary, speaking and understanding are, as Boas and Sapir always insisted, among the most unconscious of all the processes of human culture. The conscious task is that which falls to the linguist, when he tries to find out how text is organized. Listeners and readers make predictions -- they have a good idea of what to expect; if they did not make these predictions, with a greater than chance probability of being right, they would not be able to understand each other. It is the organization of a text, and in particular the relation of a text, as a semantic unit, to a clause as the primary

lexicogrammatical unit through which it is realized, that makes such prediction possible. The linguistic analysis of text is a necessary step in the interpretation of how meanings are exchanged.

A clause, while it realizes directly only a very small unit of text (sometimes referred to as a 'message unit'), stands also as the realization of a text as a whole, or some structurally significant portion of it, in the indirect, metaphorical sense that these examples suggest. The former is its automatic function, as determined by the system of the language. The latter is what Mukařovský recognized as 'deautomatization': still, of course, part of the potential of the linguistic system, but deployed in a metagrammatical way, conveying meaning by the act of systemic choice instead of (in fact always as well as) by the act of realization. A clause is a text in microcosm, a 'universe of discourse' of its own in which the semiotic properties of a text reappear on a miniature scale. This is what enables the clause to function as it does. What are clauses for? -- to make it possible to create text. A clause does this effectively because it has itself evolved by analogy with the text as a model, and can thus represent the meanings of a text in a rich variety of different ways.

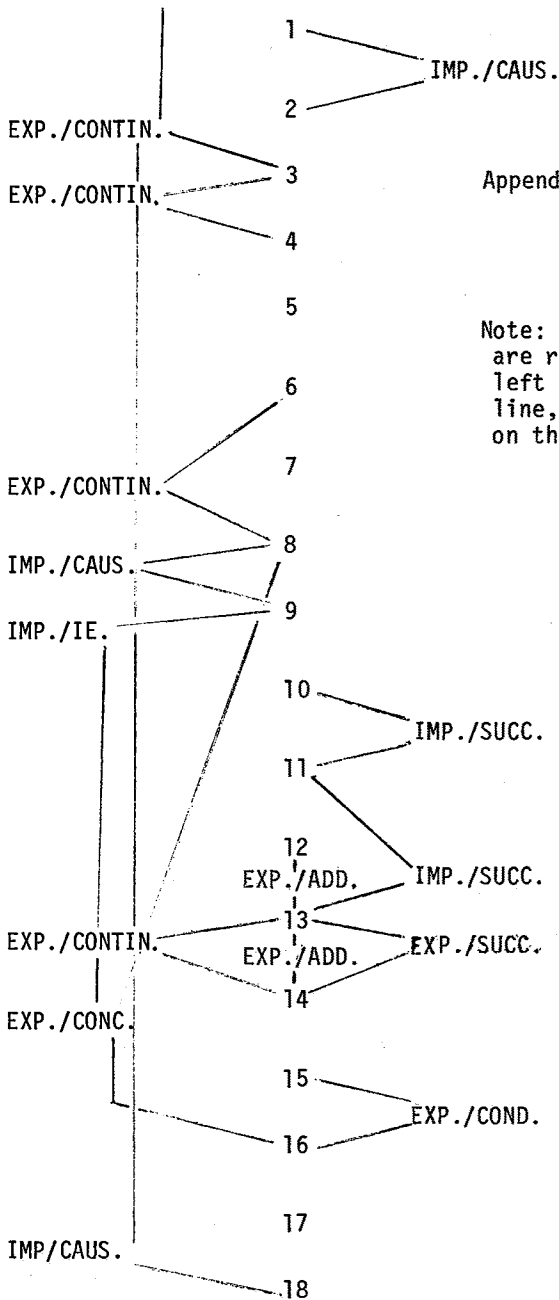
Appendix 1

from James R. Martin (forthcoming)

1. B: Lips are a must.
2. They're in fashion.
3. So ... what are you using in your skin care?
4. A: Oh I just - I don't know.
5. Something my mom gets: Ponds or something.
6. B: Yes.
7. A: I don't know.
8. B: Well really uh that's not good enough really.
9. You want something that's going to treat the skin.
10. You need to cleanse your skin well
11. uh to use a good toner
12. A: Hmm.
13. B: and moisturiser is a must
14. and of course then you can go into the make-up.
15. But if you do all these things
16. your skin will start to improve.
17. A: Yeah.
18. B: You're finding a few little spots under your skin,
aren't you?

Talking Shop: scene 21.

[see M.A.K. Halliday & Millicent Poole, Notes on TALKING SHOP: demands on language, for use with the Film Australia production. Lindfield, N.S.W: Australian Film Commission, 1978]

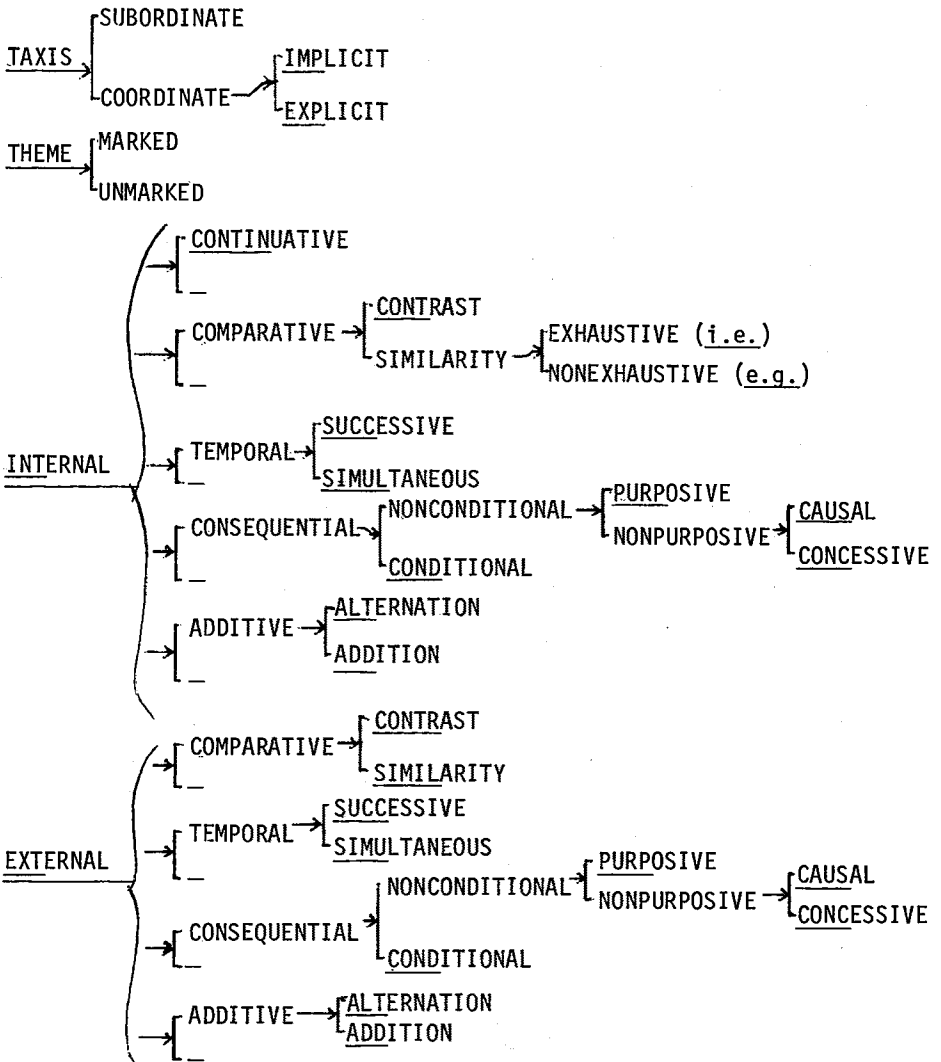


Appendix 1 (continued)

Note: internal relations
are represented on the
left side of the message
line, external relations
on the right.

Conjunctive relations in Talking Shop: scene 21

Appendix 1 (continued)



THE SYSTEM OF CONJUNCTION IN ENGLISH

Appendix 2

from Robin Melrose (1979)

The remaining eleven sections deal with every aspect of life, regulating it at every stage and aspect, ordering everything, forcing everything into a symmetrical pattern: the cities are uniform, married life is strictly controlled, education is minutely prescribed. Philosophy is confined within rigid limits, the fine arts somewhat less so (...) This planned paradise is enforced by drastic penal laws. Machinery of government is paternalistic and pyramidal. It is based on division into families, tribes, cities and provinces, and, in the case of the different crafts and professions, on units of ten. To each unit of work is assigned its 'master' (...) Each paterfamilias over fifty is a senator, each family in turn provides a tribal chief, each town in turn a city chief. Subordinate senates of cities are controlled by the Supreme Senate. At the head of the state is the General.

Totalitarianism, Leonard Schapiro (pp. 87-8)

Theme:

The remaining eleven sections ; the cities ; married life ; education ; Philosophy ; This planned paradise ; Machinery of government ; It ; To each unit of work ; Each paterfamilias over fifty ; each family ; Subordinate senates of cities ; At the head of state

Lexical Cohesion:

Group A :

regulating ; ordering ; forcing ; uniform ; controlled ; prescribed ; confined ; planned ; enforced ; penal laws ; paternalistic and pyramidal

Appendix 2 (continued)

This is a particularly clear example of an attributive message. It begins with a summation, "every aspect of life", with the general noun "aspect" acting as Head of a nominal group. It is this summation which determines the Theme of the clauses that follow : thematic prominence is assigned precisely to aspects of life, so that there is a relationship of superordinate to hyponym between summation and Theme in the message, reinforced by Theme in the last five clauses, which is in a relationship of hyponymy to "machinery of government", itself an aspect of life.

There is no explicit conjunction of interest : the chief conjunctive relationship is an implicit one, of the internal additive type. More worthy of attention is the lexical string of Group A. Just as Theme was determined by the summation, so the lexical string of Group A is determined by the non-finite clauses dependent on the clause of which the summation is an element. Together with the three verbs in these non-finite clauses, nine lexical items of the message proper constitute a string of synonyms, near-synonyms, and collocates - and of these nine, six function as Complement, and so form a kind of pattern in the Rheme. Thus it may be seen that in this attributive message the summation and the clause complex of which it is an element are both closely related to the message proper that follows : the summation is hyperonymously linked to the Theme, and the clause complex (or, more precisely, the non-finite clause) is synonymously connected - with one exception - to the Rheme. Or, to put it another way, it is most often the case that "aspects of life" are encoded in the Subject, while "regulation" is realised in the Complement.

Characteristics of message types, (table adapted from Melrose's Table IV, p. 50)

	Factual	Phenomenal	Relational
Type of process	material (doing, happening)	mental (seeing, feeling, thinking); verbal (saying)	relational (being — attribute, identity)
Characteristic theme	main participant	cognizant/sayer or phenomenon/discourse	synonym or hyponym of summative element
Typical conjunction	external temporal	external or internal additive or temporal	internal additive or adversative
Summative element	general noun, of which message is meronym	general noun, of which message is hyponym	general noun + expansion, of which message is meronym

Appendix 3

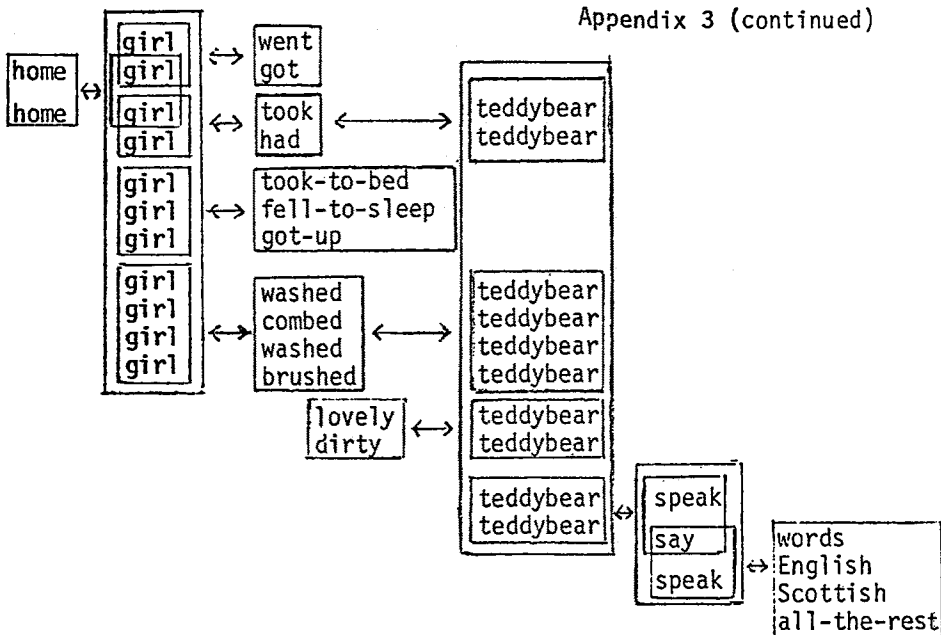
from Ruqaiya Hasan (in press)

Text A

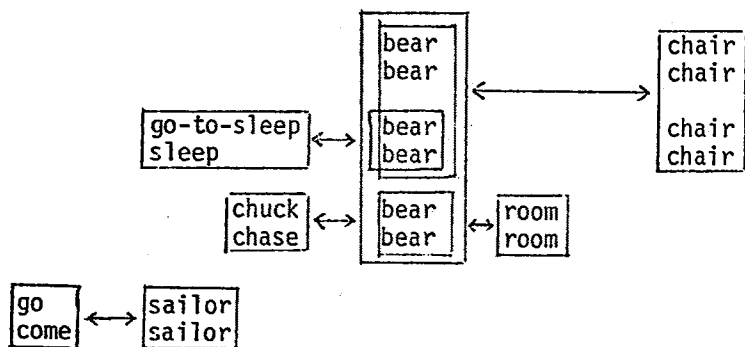
1. once upon a time there was a little girl
2. and she went out for a walk
3. and she saw a lovely little teddybear
4. and so she took it home
5. and when she got home she washed it
6. and when she took it to bed with her she cuddled it
7. and she fell straight to sleep
8. and when she got up and () combed it with a little
wirebrush the teddybear opened his eyes
9. and () started to speak to her
10. and she had the teddybear for many many weeks and years
11. and so when the teddybear got dirty she used to wash it
12. and every time she brushed it it used to say some new words
from a different country
13. and that's how she used to know how to speak English Scottish
and all the rest.

Chain Interaction - Text A

Appendix 3 (continued)



Chain Interaction - Text B



Each rectangle corresponds to one chain; subdivisions in the chain are indicated by boxing. Each box contains those items which are in a constant functional relation (shown by a double-headed arrow) to items in some box in a different chain; e.g., in Text A, between girl (4) and the box containing washed...brushed there is an actor-action relation; between the latter and teddybear (4), a relation of action-goal.

Appendix 3 (continued)

Text 8

1. the sailor goes on the ship
2. and he's coming home with a dog
3. and the dog wants the boy and the girl
4. and they don't know the bear's in the chair
5. and the bear's coming to go to sleep in it
6. and they find the bear in the chair
7. they wake him up
8. and (____) chuck him out the room
9. and (____) take it to the zoo
10. the sailor takes his hat off
11. and the dog's chased the bear out the room
12. and the boy will sit down in their chair what the bear was sleeping in

Underlined items are those which enter into lexico-referential chains. Broken underlining indicates that one item incorporates more than one token, e.g. they referring to the girl, the boy, the sailor and the dog. Empty underlining within parenthesis (____), (____) indicates a token or tokens presupposed by ellipsis.

The number of lexico-referential tokens in the two texts is not very different: 66 in Text A, 56 in Text B. But whereas 43 of those in Text A (65%) occur in chain interaction, the comparable figure for Text B is only 20 (36%). Text A thus displays considerably greater cohesive harmony.

When subjects were asked to judge the coherence of the two texts, Text A was consistently rated "more coherent" than Text B.

Appendix 4

from M.A.K. Halliday (in press)

- Mrs. Birling: I think we've just about come to an end of this wretched business.
- Gerald: I don't think so. Excuse me.
(He goes out. They watch him go in silence. We hear the front door slam.)
- Sheila: (to Inspector) You know, you never showed him that photograph of her.
- Inspector: No. It wasn't necessary. And I thought it better not to.
- Mrs. Birling: You have a photograph of this girl?
- Inspector: Yes. I think you'd better look at it.
- Mrs. Birling: I don't see any particular reason why I should --
- Inspector: Probably not. But you'd better look at it.
- Mrs. Birling: Very well.
(He produces the photograph and she looks hard at it.)
- Inspector: (taking back the photograph) You recognize her?
- Mrs. Birling: No. Why should I?
- Inspector: Of course she might have changed lately, but I can't believe she could have changed so much.
- Mrs. Birling: I don't understand you, Inspector.
- Inspector: You mean you don't choose to do, Mrs. Birling.
- Mrs. Birling: (angrily) I meant what I said.
- Inspector: You're not telling me the truth.
- Mrs. Birling: I beg your pardon!
- Birling: (angrily, to Inspector) Look here, I'm not going to have this, Inspector. You'll apologize at once.
- Inspector: Apologize for what -- doing my duty?
- Birling: No, for being so offensive about it. I'm a public man --
- Inspector: (massively) Public men, Mr. Birling, have responsibilities as well as privileges.
- Birling: Possibly. But you weren't asked to come here to talk to me about my responsibilities.
- Sheila: Let's hope not. Though I'm beginning to wonder.
- Mrs. Birling: Does that mean anything, Sheila?
- Sheila: It means that we've no excuse now for putting on airs and that if we've any sense we won't try. Father threw this girl out because she asked for decent wages. I went and pushed her further out, right into the street, just because I was angry and she was pretty. Gerald set her up as his mistress and then dropped her when it suited him. And now you're pretending you don't recognize her from that photograph. I admit I don't know why you should, but I know jolly well you did in fact recognize her, from the way you looked. And if you're not telling

Appendix 4 (continued)

the truth, why should the Inspector apologize?
And can't you see, both of you, you're making
it worse?

(She turns away. We hear the front door slam again.)

An Inspector Calls, J.B. Priestley (Act II)

In the text, obligation is tied to judgements of probability: there are opinions relating to duties, and, as a minor motif, duties relating to opinions. The two themes are closely interwoven. We have already seen that this is a projection into the text of a relation that exists between them in the system. The scales of 'possible-certain' and 'allowed-required' both typically combine with a common semantic feature, that of 'subjective', in the sense of representing the speaker's judgment; and this is symbolized by the use of modal verbs as one form of the realization of both. ...

The significance of the lexicogrammatical selections in the text can only be fully revealed by a consideration of their value in the semantic system. Textually, the passage under discussion centres around the scrutiny and recognition of a photograph. The words and structures which, in their automatic function as the 'output' of semantic choices, carry forward the movement of the text, also become de-automatized and so take on a life of their own as engenderers of meaning.

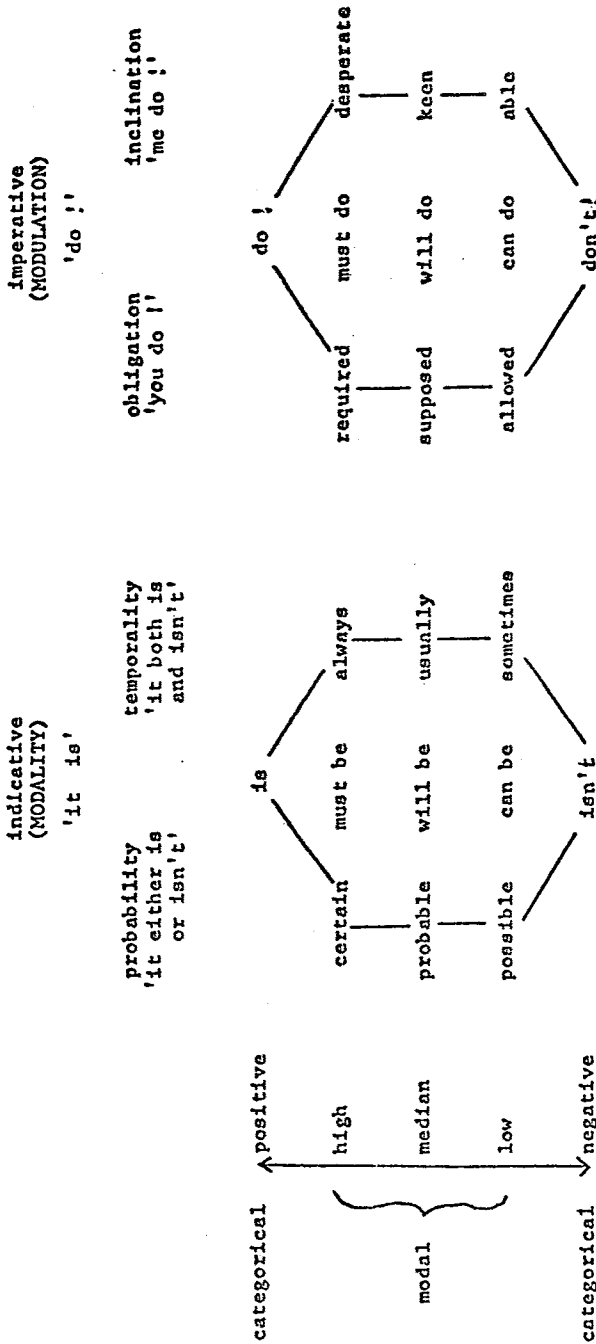
Example of modalized clause complex

Inspector: Of course she might have changed lately, but I can't believe she could have changed so much.

- | | | |
|----------|-----------------|---|
| Clause 1 | <u>polarity</u> | positive |
| | <u>modality</u> | low / (indicative : probability) /
(subjective : congruent) |
| Clause 2 | <u>polarity</u> | negative : transferred |
| | <u>modality</u> | high /
(a) <u>can</u> (imperative : inclination) /
(subjective : congruent)
(b) <u>I ... not believe</u> (indicative /
probability) / (subjective :
explicit)
(c) <u>could</u> (indicative / probability) /
(subjective : congruent) |

Appendix 4 (continued)

MODALITY IN ENGLISH (adapted from Figure 5)



high: must ought to need has/had to subjective, congruent: must &c. (modal auxiliary verbs)

median: will would shall should subjective, explicit: I think &c. (mental process clauses)

low: can could may might objective: certain(ly) &c. (modal adverbs, &c.)

Appendix 5

from Peter Fries (forthcoming)

1. A. The English Constitution--that indescribable entity--is a living thing, growing with the growth of men, and assuming ever-varying forms in accordance with the subtle and complex laws of human character.
2. B. It is the child of wisdom and chance.
3. C. The wise men of 1688 moulded it into the shape we know,
4. C. but the chance that George I could not speak English gave it one of its essential peculiarities--the system of a cabinet independent of the crown and subordinate to the Prime Minister.
5. C. The wisdom of Lord Grey saved it from petrification and set it upon the path of democracy.
6. C. Then chance intervened once more.
7. D. A female sovereign happened to marry an able and pertinacious man,
8. D. and it seemed likely that an element which had been quiescent within it for years--the element of irresponsible administrative power--was about to become its predominant characteristic and change completely the direction of its growth.
9. C. But what chance gave chance took away.
10. D. The Consort perished in his prime,
11. D. and the English Constitution, dropping the dead limb with hardly a tremor, continued its mysterious life as if he had never been.

Queen Victoria, Lytton Strachey (p. 192)

Appendix 5 (continued)

[The above] is a well constructed paragraph which contains within it three lexical systems; the first concerns living, growing, changing, the second system concerns wisdom versus chance and the third system concerns concepts having to do with government. From reading the paragraph it is clear that the main point of the paragraph is that the English constitution is living, growing and changing, that the paragraph is developed via the opposition between wisdom and chance and that the lexical system having to do with government plays no particular role within the structure of the paragraph. On examining the paragraph one finds that the terms having to do with living, growing and changing typically occur within the rhemes of the component sentences of the paragraph. The terms having to do with wisdom and chance, with certain exceptions which can be explained, occur within the themes of the component sentences. The terms having to do with the form of government occur more or less equally within the themes and rhemes of the component sentences of the paragraph. Thus the consistent placement of the terms of a lexical system inside or outside the themes of the component sentences of the paragraph affect the perceived role of that lexical system within the paragraph as a whole.

[Hence] a) the lexical material placed initially within each sentence of a paragraph (i.e. the themes of each sentence of a paragraph) indicates the point of departure of the message expressed by that sentence, and b) the information contained within the themes of all the sentences of a paragraph creates the method of development of that paragraph. Thus if the themes of most of the sentences of a paragraph refer to one semantic field (say location, parts of some object, wisdom vs chance, etc.) then that semantic field will be perceived as the method of development of the paragraph. If no common semantic element runs through the themes of the sentences of a paragraph, then no simple method of development will be perceived.

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II

LANGUAGE IN GENERAL

TOWARDS A SEMANTIC TYPOLOGY OF MINIMAL LINGUISTIC UTTERANCES

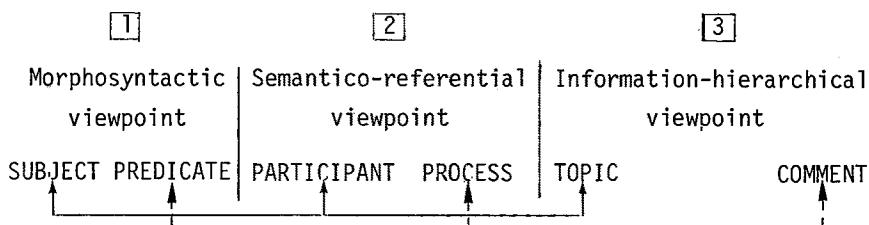
Claude Hagège

École Pratique des Hautes Études(Paris) & Université de Poitiers

Introduction

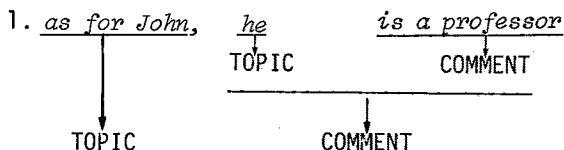
In a recent article (Hagège 1980), I propose a threefold analysis of minimal linguistic utterances. According to what I call viewpoint n°1, or the *morphosyntactic viewpoint*, any minimal linguistic utterance can be conceived of as the expression of a fundamental relationship, the predicative relationship, which holds between a subject and a predicate; in other words, from this morphosyntactic viewpoint, minimal linguistic utterances can be analyzed into a subject and a predicate, represented by various parts of speech, and among others, in most languages, by noun-like and verb-like elements respectively. According to what I call viewpoint n°2, or the *semantico-referential viewpoint*, the utterance is analyzed into one process and one participant, the latter being either an agent-doer or a patient-undergoer. Finally, according to viewpoint n°3, which I call *information-hierarchical viewpoint*, any linguistic utterance can be analyzed into a topic and a comment: the former represents the old or known information, or the thing about which one talks, and the latter represents what is said about the former. (I will not delve here into the more detailed aspects of the relationships and types of correspondences between conceptual pairings such as those which are used by various authors: old/new, known/unknown, topic/comment, theme/rheme, etc.)

Figure 1

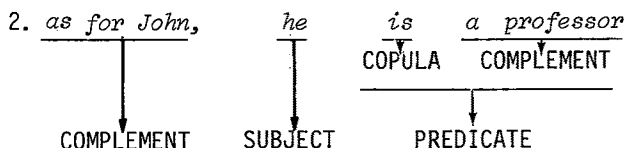


As is indicated by the arrows in figure 1, it is possible to set up a correspondence between the three viewpoints. The participant is generally represented, as far as its formal manifestation is concerned, by an element which, in terms of viewpoint n°1, functions as a subject. But this element, if considered from viewpoint n°3, i.e. in information-hierarchical terms, also corresponds to a topic. In the same way, the predicate (viewpoint n°

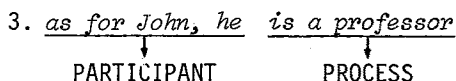
1) generally corresponds to a process (viewpoint n°2) and to a comment (viewpoint n°3). However, as soon as we examine longer utterances, it becomes less and less likely that a one-to-one correspondence can be set up between the terms belonging to each viewpoint. For example, since viewpoint n°3 is fundamentally binary, we cannot have more than a topic and a comment in the following utterance, even though the comment can itself be further analyzed into a topic and a comment:



But in morphosyntactic terms, what we have here is, successively, a complement (introduced by the relator *as for*), a subject, and a predicate, the latter being itself analyzable into copula + complement:



Finally, in semantico-referential terms, we have still another analysis:



Such differences in the analyses, which can be even greater than in the examples given here, are easy to account for. The morphosyntactic organization of linguistic utterances is their formal aspect, *form* being understood here as referring to the types of grammatical categories, to the syntactic relationships between them, and to their order of succession. And while viewpoint n°1 is thus related to the formal aspect of linguistic utterances, viewpoints n°2 and n°3 have to do, respectively, 1) with the way linguistic utterances, as meaningful sets, reflect the outside world and the speaker's thought (viewpoint n°2), and 2) with the strategy which is chosen by the speaker in order to organize the information he wants to convey (viewpoint n°3).

In this paper, I will first propose six semantic types of minimal utterances (§ I). Then, I will introduce and comment upon the important notions of *weak* and *strong transitivity* (§ II). Finally, I will study the relationships between form and content (§ III).

I. The six semantic types of minimal utterances

It is proposed here to tentatively set up a universal typology from viewpoint n°2, the semantico-referential viewpoint. Given the differences between the three types of organization of linguistic utterances, and given that these differences increase in proportion with the length of the utterances, it is methodologically safer to limit oneself here to minimal utterances. More precisely, there are at least two reasons to do so:

1) firstly, if we include cases with more than one participant and one process, then we reduce the chance of getting at a typology likely to apply to all human languages. In other words, it is hypothesized that the simpler the semantic structure, the more predictable its diffusion

2) secondly, since there is a more or less important, but, at any rate, inevitable distance between the abstract conceptual formula which represents meaning and its realization, in concrete languages, as an utterance, we reduce this distance if we reduce the number of things talked about. In formerly fashionable terms, the shorter the linguistic utterance, the smaller the difference between its form ("surface structure") and its "deep structure". And since our scope is to get at a typology likely to have a cross-linguistic validity, it is important to reduce the abstract conceptual schemes to their simplest manifestations.

Having set up the method, we can now go on to propose the six following types of semantic relations between a participant and a process:

Figure 2

<u>Semantic types</u>		<u>Participant</u>
static	1 equative	defined by the process
	2 attributive	qualified by the process
	3 situative	identified by its location
	4 existential	posited as existing
	5 descriptive	conceived as experiencer
non-static	6	having control over the process

II. Weak and strong transitivity

As a consequence of the method I propose to use, there are, in the framework presented here, no cases involving two participants, which would correspond, in morphosyntactic terms, i.e. from viewpoint n°1, to what is called transitivity. But these cases may be derived, by the simple addition of one more participant and the operations of factitivization or causativization, from any of the six types I propose to work with. For example, from

4. *the man was blind*

which illustrates semantic type 2 (attributive), we can get

5. *the accident made him blind*

To take another example, from

6. *the book is on the table*

which illustrates semantic type 3 (situative), we can get

7. *put the book on the table*

In the first case, a new participant (the accident) causes the former participant to be qualified as it is, and in the second case, the new participant (the addressee of the imperative) is required to cause the former participant to be located in a certain place. In types 1 through 4, which are static, the former participant becomes a patient when a new participant, the agent, is added. In type 6, we have another kind of relationship between the participant and the process: this type is non-static, because it involves the notion of *control*. This is a very important notion. Many words expressing the process, and corresponding, in morphosyntactic terms, to the predicate, imply, in semantico-referential terms, a certain degree of control of the participant over the process: compare

8. *Paul is running*

or

9. *they have arrived*

or

10. *he will be lecturing*

with

11. *she is dead*

or

12. *Peter has ringworm*

or

13. *they were injured*

11, 12 and 13 are possible formal realizations of type 5, in which something happens to the participant without his having control

over it. However, type 5 occupies an intermediate position. It is normally static, as is shown in examples 11-13 above, and in that case, the addition of an agent and the operation of factitivization or causativization yields transitive structures, like 11'. *John killed her*, 12'. *the cat gave Peter ringworm*, or 13'. *the police injured them*. But type 5 can also imply a kind of activity, albeit with little or no control. In that case, it can yield a transitive structure by the orientation of this activity towards a goal or a patient. The opposition between types 5 and 6, then, illustrates the various possible degrees of control of an agent over a patient. This variety can be morphologically marked (view-point n°1). For example, corresponding to the following English utterances:

14. *he saw him* (a formal realization, in terms of vp.1, of type 5
and + a patient)

15. *he killed him* (a formal realization, in terms of vp.1, of type
6 + a patient)

in which no mark indicates the semantic difference between the processes of seeing (=little or no control) and intentionally killing (=strong control), we have in Comox (a Salish language of British Columbia), respectively,

16. $k^w\acute{e}n - o - x^w - a - s - \acute{e}z$ (see - linking vowel - 3.p.obj.weak
control - linking vowel - 3.p.subj.
- past)

and

17. $qe: - t - a - s - \acute{e}z$ (die - 3.p.obj.strong control -
linking vowel - 3.p.subj. - past)

with two different suffixes: x^w and t . As expected, $qe:$ can also be followed by x^w if the sense is that one has killed accidentally. I have proposed (Hagège in press) to interpret the difference between these two suffixes, which stand for the patient (object in morphosyntactic terms: cf. Hagège 1980), as an opposition between what I call *weak transitivity* (lesser control of the agent over the process) and *strong transitivity* (greater control). A comparable opposition is found in many other languages. The degree of transitivity has, from the semantic point of view, several variants and, from the formal point of view, several possible realizations:

1) more volitive or conscious vs. less (or non-) volitive or conscious, as in classical Armenian, where, e.g., *mor*, "to forget", takes an active desinence in the imperative, but a neutral one in the indicative (Feydit 1969:7)

2) more marked effect on, or total affectedness of, the patient vs. less marked effect on, or partial affectedness of, the patient:

a) in Finnish and Estonian, as is well known, the first member of this semantic opposition is expressed by the desinence of the accusative (Finnish) or of the genitive (Estonian) on the noun corresponding to the patient, while the second member is expressed (in both languages) by the desinence of the partitive

b) in Samoan, the first and the second members of this pair are distinguished (Cook 1978) as requiring, respectively, the ergative (e.g. with a verb meaning "to beat") and the non-ergative structure of the utterance (e.g. with a verb meaning "to see")

c) in languages of the Eastern Caroline Islands, such as Trukese, the verb stem receives a 3.person object suffix, which makes it transitive, when the patient is totally affected (Sugita 1973:395-399). In Palauan, an Indonesian language spoken in the Western Carolines, the same formal phenomenon corresponds, rather, to the perfective aspect, as opposed to the imperfective (Hagège forthcoming). As is well known, the degree of transitivity is related, formally as well as semantically, to the degree of perfectiveness (aspect) and to the degree of definiteness of the patient. I cannot, here, go into more details about this important matter, which will be extensively dealt with in Hagège forthcoming

3) process carried out or completed vs. on-going process, e.g. in many ergative languages (Eskimo, languages of the Daghestan (NE Caucasus) such as Avar, or Circassian dialects like Abzakh (Paris forthcoming), etc.). These languages oppose an ergative structure, with agent in the ergative and patient in the absolutive or zero case, to a non-ergative structure (strangely called "anti-passive" by some scholars, as though the grammars of the European languages that possess a passive were to be taken as the unique criterion: cf. Hagège 1978), with agent in the absolutive or zero case (case of the topic: Hagège 1978:29-33) and patient in an oblique case or, by casual inversion (ibid.), in the ergative.

III. The relationships between form and content

1) dissymetry between form and content

One should be careful not to confuse the semantic types and their formal manifestations. For example,

a) type 1 is often manifested by nominal sentences. However, it is not exclusively represented by such a formal pattern. In Eskimo, for instance, the possessor and the agent are materially identical; in Circassian, similarly, we have (Paris 1979:113):

18. $a - r / \emptyset - p - \text{ʒə}$ (this - subj. / he - you - brother)
"he is your brother"

19. $a - r / \emptyset - p - \text{ʒəy}^{\circ}\text{ə} - \gamma$ ($\text{ʒəy}^{\circ}\text{ə}$ = "see", γ = past)
"you saw him" (= "he is your seeing")

But despite this material identity, only example 18 is equative (type 1); 19 has nothing to do with an equation, since what is talked about is an action, carried out by someone on someone else, which corresponds to type 6 (non-static) with the addition of one participant, yielding the scheme agent + process + patient

b) type 3 is often manifested by sentences with relator phrases (+ copula) as predicates. However, this structure may also perfectly well correspond, instead, to type 1, i.e. be equative in meaning. In old Egyptian, for example, we have (Clère 1949:21):

20. $\text{ʔw}f / m - b\text{ə}k$ (he / in - servant), "he is a servant"

In other words, a semantic typology of minimal linguistic utterances is not a typology of the formal structures of subjects and predicates. Furthermore, the structure with relator phrase may also correspond, as well as to type 3, to type 6, non-static. In Indonesian, for instance, we find the same structure in 21 and 22:

21. *dia / di - Jakarta* (he / in - J.), "he is in Jakarta" (type 3)
 22. *dia / ke - Jakarta* (he / to - J.), "he goes to Jakarta" (type 6)
 (Cartier 1978:1)

2) symetry between form and content

In spite of the above considerations, which suggest caution as regards the formal identity of structures corresponding to non-identical semantic types of utterances, it is important to note that cross-linguistically as well as language-internally, the relationship between meaning and form is not always random. There exists an observable kinship between certain semantic types of minimal linguistic utterance, such that some of them seem to go by pairs, the formal manifestations of each member of a pair being mutually related:

a) semantic type 1, the equative type, and semantic type 2, the attributive type, are opposed to each other as expressing, respectively, the essence and the attributes (in the Aristotelian sense of this latter term). However, the boundary is not always very sharp. This explains, for example, the relationship, in Russian, between two cases of the nominal declension: the nominative (i.e. one of the possible predicates in type 1) and the instrumental (one of the possible predicates in type 2). Compare 23 and 24:

23. *on / profesor* (he / professor), "he is a professor"

24. *on / vinoj - etogo* (he / cause - of-that), "he is responsible for that"

In 24, the instrumental is used, instead of the nominative, as in 23, because the participant is not held permanently or consubstantially responsible, while in 23, the participant is *defined* as being a professor. These examples also show that in type 2, the predicate, although it is often represented by an adjective, is not necessarily so represented, all the more since this category is lacking in many languages.

In Israeli Hebrew, types 1 and 2 can also be related, to the extent that the forms which express them are themselves related: according as we are dealing with a classification (type 1) or with an identification (type 2), we can either have no 3. person pronoun in the predicate (25 below) or have such a pronoun (26):

25. *Yosef / nahag* (J. / driver), "Joseph is a driver"

26. *Yosef / hu - ha - menahel* (J. / he - the - director), "Joseph is the director" (Rosén 1977:213)

b) there is a relationship, as well, between semantic types 3 and 4, on at least two counts:

i) as far as the concept of possession is concerned, there is a quite remarkable fact: possession is not a semantic prime; it is a complex notion, since it involves two participants, the

possessor and the possessed. What we note is that, since none of the six semantic types of minimal utterances that are proposed here corresponds to the concept of possession, it can be expressed by adding a participant to the structures usually associated with some of the six types, according to the way possession is viewed. Thus, for example, the possessor can be conceived of as a local complement and the possessed as simply existing. This is why many languages express possession by means of formal structures usually associated with types 3, situative, and 4, existential. For example:

27. Russian *u - nego / den'gi* (at - him / money), "he has money"

28. Hebrew *'eyn / l - o / bayt* (there-is-not / to - him / house)
"he has no house"

But it is also possible to express possession through a formal structure commonly associated with type 1, equative. Being possessor of something, then, is viewed as comparable with a definition, since the language resorts to the same structure for both. In Quechua, for example (Bolivian dialects), we have

29. *wasí - yux / ka - nki* (house - possessor / be - you), "you have a house" (Grondin 1971:155)

ii) another relationship between types 3 and 4 has to do with the opposition of definite and indefinite. In Finnish, for instance, the same verb, *on*, meaning either "is" or "there is", is used in utterances which are the formal expressions of semantic types 3 and 4. But in the case of a situative meaning, since we have a *given* element about which *new* information is brought out, dealing with its situation, the given element is normally definite, whereas in the case of an existential meaning, it is the existence of an element (in an already known place) which is the new information, hence this element is indefinite. Compare 30 and 31:

30. *auto / on kadu - lla* (car / is street - in), "the car is in

31. *kadu - lla / on auto*, "there is a car in the street" the street"

c) finally, there is a relationship between semantic types 5 and 6, because, as stated above, there are various possible degrees of control of a participant over a process. Not only do we find, in many languages, a formal opposition between strong and weak transitivity or their variants (see § II), i.e. between two distinct types of two-participant utterances resulting from the addition of one participant to semantic types 5 and 6, but even within the framework of minimal utterances, involving just one participant, the difference between 5 and 6 can be marked by a regular morphological opposition. While no mark distinguishes 8-9-10 above from 11-12-13, in Guaraní we have two paradigms of personal pronouns: lack of control (type 5) is expressed by the one whose 1. and 2. pers. sg. are *xe* and *nde* (hence the term "verbos xendales" applied by A. Guasch (1956:114) to the verbs combining with it), and control (type 6) by the one with *a*, "I" and *re*, "you" (hence "verbos areales"). The conception of control is not necessarily identical across languages, being related to variable cultural attitudes. The Guaraní verbs meaning "to sleep", "to shut up", "to remain" or

"it rains" are "verbos areales", because they refer to animate beings (including the natural forces (personified) that produce rain, etc.). However, there are some cross-cultural homologies. In Guaraní as in English, for example, unconscious or involuntary processes are conceived of as lacking control. Compare 32 and 33 below (expressing type 5: no control) with 34 and 35 (type 6: control):

32. *xe / manduʔa*, "I remember"

33. *nde / puruʔa*, "you are pregnant"

34. *a / ñeʔẽ*, "I am speaking"

35. *re / maʔapo*, "you are working" (Guasch 1956:117; Gregores and Suárez 1967:131, 239)

In other languages, it is not the form of the personal pronoun that changes, but its case, along with the voice of the verb. In Russian, for instance, 36 and 37 stand in opposition:

36. *emu / xočetsja* (to-him / wants-itself), "he feels like (it)"

37. *on / xočet*, "he wants (it)"

In 36, expressing type 5, the participant actually wants something, but he does not *want to want* it! The complement which stands for it is in the dative case, and the verbal predicate expressing the process is passive. In 37, on the other hand, we have nominative case and active voice. If one more participant is added, by way of orientation of the process towards a goal or a patient, the noun which expresses it in morphosyntactic terms will be in the nominative case in utterances corresponding to type 5, and in the accusative case in utterances corresponding to type 6. This is what we get in Dravidian languages, like Kannada. Compare 38 and 39:

38. *avan - iḡe / ha:ḡ - u / ke:ḡi - situ* (he - to / music - subj. mark. / hear - descriptive)
"he heard the music"

39. *avan - u / ha:ḡ - aṃu / ke:ḡi - danu* (he - subj.mark. / music-obj.mark. / hear - active)
"he listened to the music" (Sridhar 1976:584)

Conclusion

At the close, I would like to draw attention to the importance of maintaining distinct methodologies according as one is dealing with viewpoint n°1 (morphosyntactic) or with viewpoint n°2 (semantic-referential). I also wish to emphasize, however, that these viewpoints are tightly related. Languages are formal systems which convey meanings. In other words, when we study linguistic utterances in terms of the conceptual scheme which they express, it is most important not to lose sight of the material means that correspond to this scheme. The kind of typology I have proposed here can, in a way, be viewed as a contribution to the solution of one fundamental linguistic problem: the relation between syntax and semantics.

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SURFACE DEVIATION AS GRAMMATICAL COMPETITION

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The purpose of this paper is to suggest that two presuppositions which underlie much of contemporary linguistics need to be refined. The first is the notion that a normal individual can produce utterances which are in some absolute sense 'unacceptable'. The second assumption is that when speaking, every person continually applies a complete and totally well-formed grammar to process input and output. In order to add substance to the suggested need for revision, let us consider a pair of examples from Spanish syntax. The first case concerns verbs like gustar 'to be pleasing to'. This verb occupies the spot lexically equivalent to English 'like', but is intransitive, with the object which is pleasing being the subject of the verb and the person pleased being the indirect object, as in

- (1) Me gustan las matemáticas 'I like mathematics'

English-speaking students have difficulties with such verbs and try to make them agree in person and number with the person doing the 'liking'; interestingly enough, such was the configuration in old Spanish (Lipski 1975) and even today vestiges of such usage may be found, with a slightly altered meaning. Foreign students, even when they feel they have mastered the use of gustar, frequently make inappropriate responses to statements, utilizing the subject pronouns instead of the indirect object; for example to (1) one could reply

- (2) A mí también 'I do too'

Native speakers never make mistakes in responding, again suggesting that in their internal grammars gustar is intransitive. Problems may arise, however, in more complex sentences, where gustar appears in subordinate clauses. Consider a sentence like

- (3) Ese es el hombre a quien no le gustan las matemáticas
'That is the man who doesn't like mathematics'

This sentence is grammatically correct but native speakers avoid such configurations whenever possible, choosing instead a corresponding transitive verb or changing the focus in another manner. In the written language there is an opportunity to revise and

eliminate such constructions, but in speech they crop up as people overextend themselves in the course of a conversation. Even educated native speakers hesitate when asked about such sentences, and when pressed to use gustar they are not quite sure if sentences like (3) are well-formed. Whether or not they conform to official grammars, the point remains that native speakers do not feel entirely comfortable with them.

Spanish has a syntactic turn of phrase, reminiscent of proverbs, in which quien, normally a relative pronoun, is used alone as a subject or direct object, meaning 'he who'.

- (4) No hay quien me diga eso 'No one can say that to me'

Such constructions are only possible when quien is the subject or direct object, but native speakers sometimes try to use it with gustar. For example, in order to translate the idea of 'whoever doesn't like red wine shouldn't drink it', several possibilities may emerge, all incorrect and yet each of which expresses in some vague fashion the fact that quien is not the subject of gustar:

- (5) A quien no le guste el vino tinto no debe beberlo.

This sentence would be correct if a true subject, like una persona, were added; as it is, the sentence is incomplete. The a, indicating the indirect object, has been placed before quien as in a relative clause. A variant is

- (6) Quien a que no le guste el vino tinto no debe beberlo.

This sentence is more nearly acceptable, since at least quien acts as the subject of the second verb. On the other hand, it does not fit in at all with the first verb, although if it were replaced by una persona it would appear more acceptable (cf. Keniston (19-37: 186)). Another, commonly heard possibility is

- (7) Quien no le guste el vino tinto no debe beberlo.

In this sentence there is no sign that gustar is intransitive, except for the indirect object pronoun le (cf. Beinhauer 1968: 343). The best solution would be to not use a quien construction, or to choose a transitive verb, and yet speakers spontaneously produce the above forms. Even more difficult analyses result in sentences like

- (8) Salgo con quien me dé la gana 'I'll go out with whomever I please'.

Here the sentence is left grammatically dangling (Franch and Ble-cua 1975: 1086).

No uneducated speaker and apparently even few educated speakers have a clear notion of the syntactic relations of a sentence, especially given the minimal case markings of Spanish (García 1975: 89). The verb gustar is syntactically different from transitive

verbs in that it takes certain pronominal forms, but these are purely mechanical considerations and do not have anything to do with intuition. Just as the choice of mood, concordance and pronoun is often a redundant process, so are gustar sentences formally assembled from the available materials. What are speakers thinking of when they produce the above utterances? There appear to be two major possibilities. The first is that the speakers are not utilizing a well-formed grammar but are merely lumping together categories based on vague intuitive notions of semantic coherence, hoping that morphological momentum and the typical speaker's stock of automatic concordances will do the rest. To claim that no internal model is at work is to deny all working hypotheses, and if it turns out that speakers have nothing more than a dice cup in their heads then linguistics has been barking up the wrong tree for more than a century.

The second possibility is that there is more than one grammatical model at work, each imperfectly articulated and none of which takes complete precedence over the others. This idea is worth pursuing since the speakers in question, although unable to precisely analyze the utterances they produce, are aware of certain basic configurations. In the case of gustar constructions there are probably at least two competing analyses: one treating gustar as an intransitive verb, and the second treating it as a transitive verb. The observed deviant sentences may be accounted for by postulating not a single analysis but rather a *resonance* between these interpretations, an effort (clearly impossible but nonetheless performed) to reconcile two incompatible grammatical analyses. Neither analysis takes complete precedence, and in each of the above sentences the blend is slightly different. In sentences like (5) the intransitive analysis strongly predominates, and the fact that quien normally serves as the subject is apparently disregarded for the entire sentence. In (6) there is an even split in this grammatical tug of war; quien is the subject of the second verb while the intransitive analysis takes precedence in the first part. In (7) the transitive analysis is more heavily weighted, and the only sign that gustar takes an indirect object is the presence of le. None of these variants nor any of the others that occasionally occur may be fully analyzed by any available model of Spanish grammar, and yet by postulating the conflicting interaction of two models (one synchronically in effect the other at least historically valid) it is possible to account for the 'deviant' output without postulating some additional grammatical component. This matter will be returned to.

One of the most widely discussed problems in Spanish syntax is the use of the pronoun/particle se in a variety of 'impersonal' or 'passive' constructions. At stake is the issue of the role of this tiny word which in other functions may be a reflexive or reciprocal pronoun or in an entirely different construction (despite the claims of García 1975: chap. 8) a substitute for the indirect object pronoun le. These uses are easily analyzed and present few difficulties. Of interest is the use of se in sentences in which overt mention of an agent is avoided; such sentences often translate into English with the passive voice, although they are

grammatically unrelated to the true passive in Spanish. Consider:

(9) Se habla español 'Spanish is spoken'

(10) Se dice que habrá huelga 'It is said/one says that there will be a strike'.

It is easily demonstrated (e.g. Otero 1972) that se cannot be the subject of the sentence, as in German man, French on, English one, etc., but it is not immediately clear what the subject of such sentences could be. There are two partially overlapping types of se sentences at issue. The first is the 'passive reflexive' in which the verb, which must be capable of taking a human subject, agrees in number with what should be its 'direct object':

(11) Se abren las puertas a las nueve 'The doors are opened at 9:00'.

The second type is the 'impersonal se sentence'; the verb remains in the singular and the focus is shifted slightly to indicate merely non-mention of a (nonetheless real) agent:

(12) Se asesinó a los senadores 'The senators were murdered'

The passive reflexive construction can only apply to inanimate objects, since concordance of number in an animate noun would require a reflexive or reciprocal interpretation. The impersonal se construction can be used either with animate or with inanimate nouns, but when the accompanying noun is in the singular, the verb gives no syntactic clue as to which interpretation is to be preferred. It is also possible, as in (10), to use the impersonal construction without an object noun.

Matters are not so simple, however, for there exists much controversy as to whether there should ever be concordance in the plural, that is, whether the nouns accompanying the se constructions may ever be considered grammatically the subject. This concordance becomes especially troublesome when the nouns are unaccompanied by an article, being used in an indefinite sense:

(13) Se solicitan informes 'Information is requested'

Normally a common noun in subject position must be modified by some type of determiner, be it article, possessive, demonstrative or numeral. It has been suggested by Otero (1972) that sentences like (13) are ungrammatical, the first cases of putative 'ungrammatical acceptable sentences', and that speakers who use them are merely extracting concordance from the only available noun in the sentence to satisfy the desire for a simple subject-verb pair. Other examples can be adduced to support such a tendency, but it is equally clear that subject pronouns are always optional in Spanish. In other cases, nonetheless, there is no attempt at false concordance. Moreover, whereas it is the sentences with the plural verbs which are supposedly the result of an improperly applied analysis, such sentences are considered normal and totally acceptable, while the use of impersonal se sen-

tences with singular verbs and plural (inanimate) nouns, is considered colloquial, vulgar and sometimes even impossible:⁴

(14) Se repara coches 'Cars fixed'

This is hardly the configuration that one would expect for a 'popular' analysis. In fact, the opposite concordance, a plural verb with a plural noun which, due to the presence of a is actually an object, has been noted (Schroten 1972: 76-7):

(15) Se asesinaron a los senadores 'The senators were murdered'

The matter becomes more clouded when there are two or more levels of embedded verbs with se, as in

(16) Se mandó/mandaron sacar las copias 'It was ordered to make the copies'

Here even speakers who ordinarily make the plural concordance exhibit considerable hesitation as to the 'correct' form.

By far the most comprehensive model is that of García (1975), who proposes an entirely synchronic analysis of se-expressions, based on the notion of speech roles. In essence García proposes that a singular verb relegates a least active status to a following noun, with the 'absent agent' se acquiring a more active status. There is insufficient space here to discuss García's proposals, which are especially attractive in attempting to account for the diachronic developments leading up to the current variation. In the synchronic dimension it is not immediately clear that speakers are thinking in terms of speech roles (most of the examples García mentions come from literary texts), but García does mention that deviant sentences result from a tug of war (212) between cases roles and observable reality. Thus her analysis is not really contradictory to the one suggested here, but is parallel to it.

I will make no further attempt to elucidate the complex nature of se, since the matter has already been sufficiently well discussed. There is every reason to believe that not only one but in fact several of the proposed analyses are correct and that speakers who exhibit variant forms (since vacillation is common) are exhibiting a resonance among the interpretations. García's analysis and Otero's, postulating the false concordance, come the closest to the concept of resonance, since both authors note that a desire to achieve a certain superficial configuration may take precedence over a grammatical analysis. Otero's conclusions are strange, however, for what is the role of 'grammar' if millions of speakers continually violate its tenets and produce acceptable but 'ungrammatical' sentences?⁵ There is a conflict between two significantly different analyses: one in which the verb is in the plural and in which there is no agent whatsoever, and the other in which the verb is in the singular and the agent is kept in the background (cf. also Molina Redondo 1974: 23-25). Significantly enough, learned technical styles in both Spanish and English are

heavily weighted toward passive and impersonal constructions, where things 'are done, felt, deemed', etc. and it is precisely in the most literarily acceptable forms of Spanish that se constructions occur with plural verbs, that is with maximal removal of the subject, to the point where it cannot be reinstated. Popular language, with its euphemistic turns of phrase, often seeks to disguise and yet reveal the person behind the utterance, and this may account for the 'impersonal' sentences with singular verb and plural noun. This impressionistic statement is in no way offered as a substitute for the numerous detailed analyses of se, but it does suggest one means of viewing the apparent deviance among speakers as the result of opposing tendencies or analyses. One interpretation postulates an agent which is recoverable from the context, similar to the more personal subject uno 'one'. The other interpretation eliminates the subject completely and uses the reflexive construction to attribute no outside influence at all. It may well be, as Otero suggests, that the only available noun is at the root of this type of sentence, but it is quite possible that additional factors are also to be considered.

The cases discussed above are merely two of the many instances where examination of the dusty corners of Spanish grammar, particularly those evidenced by the unguarded speech of less educated people, yields examples which find no ready analysis within a single model. Other examples would include: singular/plural concordance with group nouns such as gente 'people'; the verb haber 'for there to be' which should always occur in the singular and yet which sometimes occurs in the plural if the accompanying noun is plural:

- (17) Hubieron muchas dificultades 'There were many problems';

multiple layers of embedding with the relative conjunction que, which leads to grotesque forms; causative constructions with hacer 'to do, make': from totally acceptable

- (18) Se hace afeitar en la barbería 'He has himself shaved at the barbershop'

one gets the deviant sentence (Alcaraz 1976)

- (19) Se afeita en la barbería

with the same intended meaning, rather than the literal 'he shaves himself'; the case of apparently double object verbs in which the direct object grammatically causes the verb to appear in the plural (cf. García 1975: 384-5):

- (20) A Pedro le dan muchos ataques 'Pedro has many fits'

Additional examples could be analyzed to show the conflicting interpretations, but limitations of space preclude such an extension at this time.

Although the intent of these remarks has been merely to demonstrate a methodological possibility for analyzing certain recalcitrant cases, it would be instructive to briefly enter upon the matter of the incorporation of competing systems into linguistic theory. In some fashion there seems to be a statistical process at work, a weighting mechanism which assigns varying values of precedence to particular analyses. In the area of sociolinguistics one has seen the variable rules, whose coefficient of application is a numerical percentage. If one were to examine the output of Spanish speakers with regard to the cases under discussion it might be possible to formulate similar variable rules, but some speakers are consistent about producing 'deviant' sentences under certain conditions. Since in less esoteric cases they may produce sentences according to the normal grammatical analysis, one need not postulate a different anomalous grammar to account for the production of certain deviations. Rather, a weighting process could be established, once the number and nature of the competing analyses have been established. One method of formalization would be a version of the mathematical theory of fuzzy subsets, a theory which generalizes the notion of set inclusion. Normally a particular item is either a member of a certain set or it is not. The notion of fuzzy subsets allows one to assign any value between zero and one to set inclusion: zero implies exclusion, one implies inclusion, and intermediate values represent the 'fuzzy' portions of partial inclusion. Statistical and quantum mechanics have applied similar procedures, although not making use of fuzzy subsets, to show, for example, the probability of a particle being at a certain point at a given time. There is good reason to suppose that naive grammatical analysis may be represented by fuzzy subsets, since certain complicating factors destroy the normally discrete property of membership in a grammatical model. For example, in the case of se constructions, one may consider the matrix set to be that of, say, all impersonal sentences. The complement of the set would be all sentences with a stated or implied agent. One fuzzy subset would be the group of se sentences with singular nouns. Fuzzy membership would imply that, with a given proportion, some such sentences would be regarded as impersonal and other as merely effacing the subject. The same would hold for se + plural noun, another fuzzy subset, in which case non membership in the set of impersonal sentences would result in a singular verb. The case of gustar could be handled by postulating a set of transitive verbs, with the complement being the remaining verbs. Certain types of gustar sentences would exhibit fuzzy membership in the set. The specific constructions, constraints or confusions that trigger deviations from normal grammatical expectations would be the factors that account for the particular weighting assigned to the fuzzy membership.

Linguistics is already burdened by a large amount of formalism much of which has not passed beyond the stage of a priori models, and I have no desire to add to this burden needlessly. In the case of competing grammatical analyses, at this preliminary point the weightings and the precise model to be applied are less important than the global idea of more than one subgrammar at work.

The concept of fuzzy subsets, or any other formalism that may be adopted to represent competing analyses, is in no way an explanatory device as such, but is rather a way of modeling the observed behavior of a large number of speakers. Kaufman (1975: xi) has stated that "man possesses, in addition to the faculty of reckoning and thinking logically, that of taking things into account globally or in parallel ... the global or parallel reasoning, as opposed to logical reckoning is fuzzy and must be fuzzy. A living being, having the possibility of initiative, perceives and treats a piece of more or less fuzzy information and adapts itself. ... a man ... has an immense entropy function; he may choose, decide, evolve, err, set right, begin again, understand a little ..." Zadeh (1975: ix) states that the human ability for fuzzy thinking "makes it possible for humans to decipher sloppy handwriting, understand distorted speech, and focus on that information which is relevant to a decision. And it is the lack of this ability that makes even the most sophisticated large scale computers incapable of communicating with humans in natural--rather than artificially constructed---languages" (cf. also Uhr 1975: 376). The grammars of linguists, while they purport to describe natural languages, are no the less formal deterministic models and in order to totally account for the variability of natural speech, they must be tempered by additional mechanisms.

Notes

- 1 Cf. Real Academia Española (1973: 532), Bello and Cuervo (1973: 334), Ramsey and Spaulding (1956: 196) for additional comments.
- 2 See also Beinhauer (1968: 343). Keniston (1937: 186) cites some 16th century examples where a us used even when quien is the subject, apparently through analogy.
- 3 Schrotten (1972: 75-6) states that precisely the lack of the determiner is responsible for the deviant sentences.
- 4 Cf. Otero (1973: 238). Knowles (1974) opts for different deep structures. Contreras (1973) proposes a formal agreement rule; Suárez (1976) merely regards the agreement as 'optional'.
- 5 Otero (1973: 559) relegates the variability to 'performance', which is not in keeping with the view of this paper. One may choose to call competing grammars a performance phenomenon, but such does not detract from its validity. The notion of competition is nothing new; historical changes have frequently been described in terms of analogy, etc. However, the above remarks have suggested that similar models can be applied in the synchronic dimension.
- 6 There are a few (educated) native speakers who do not agree with this analysis, but they are in the minority.

- 7 Fuzzy subsets have been applied to semantic matters, in a purely qualitative way, by Lakoff (1973). Kay (1975) considers the possibility of utilizing fuzzy subsets in a quasi-linguistic context, but opts for other models. To the best of my knowledge, these represent the only commonly available applications of fuzzy subsets within the domain of linguistics, although within mathematics linguistic applications (particularly to computer languages) are frequent.

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THE 'MARKET' FOR LANGUAGE THEORY

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Many of my fellow LACUS members wear the same two hats as I, hanging one in the linguistics locker and the other in the Modern Language Department. And many will have noted, as I have, a lack of communication between our two sets of colleagues, particularly compared with the Golden Days of applied linguistics. In the early 1960's, you recall, language theorists were eager to contribute linguistic insights to the language practitioners, and the latter were generally eager to listen. It will be my contention here that the "market" for language theory can be as strong in the eighties as it was in the sixties, if we will find ways to match our product to the present needs of our old customers, the language teachers and materials designers.

The major portion of my presentation will therefore be a summary of suggestions for theoretical linguistic investigation, based upon my perception of consumer needs. A concluding discussion will sketch out a proposal for an expansion and restructuring of the "applied connection" between linguistic theory and language-teaching practice, in the hope of re-legitimizing theoretical linguistics as a problem-solving activity.

Let me first digress, however, to explain my understanding of the dichotomy between theory and praxis, as it relates to linguistics. There is no question that application of a theory presupposes the formulation of a theory, and that applied linguistics is therefore logically secondary to theoretical linguistics. It does not follow, however, that this chronological dependence necessarily implies a one-way flow of information. If it did, then the main role of the applied linguist would be to search out language-learning problems to match available linguistic theories.

At its worst, this approach leads to the solving of imaginary problems at the expense of real ones, solely to vindicate the theorist. At best, it invites premature application of theories which need more time in the oven, which is probably why a prominent theoretical linguist appeared before a national conference of language teachers in 1966, to report: "I am, frankly, rather sceptical about the significance, for the teaching of languages, of such insights and understanding as have been attained in linguistics and psychology" (Chomsky 1973: 234).

Instead, the applied linguist ought to bear an occasional message up the mountain as well as down, bringing to the researcher a report on genuine practical needs and a request for help. That is, it seems entirely appropriate to me that the applied linguist periodically "put in an order" for a theory, and that is the major

portion of what I propose to do here.

At the most recent annual meetings of ACTFL, AATG, and the Central States Conference on the Teaching of Foreign Languages, I have compiled a list of recurrent themes which suggest a need for theoretical input. I have compared this list against the contents of the most recent issues of three pedagogical journals and formed the following perception of the major markets for language theory.

Most conspicuous in its recurrence is the request for linguistic criteria for selecting the communicative items to be incorporated into "notional/functional" syllabuses. Watson 1977 has summarized the common view of such a syllabus this way: "It looks at what people want to do with the language, going from function to form, from meaning to structure. ... It is thus the antithesis of the structural syllabus." But Valdman 1978 rightly reminds us that: "Available descriptions of communicative competence are either illustrative or programmatic, and we have little knowledge about the types of units that underlie it" (570). This does not, however, mean that the search for functional or communicative units must be left entirely to the sociologist or the psychologist. After all, as Corder 1973 concludes in his discussion of just this topic: "Because linguistics so far has given us the most detailed description of language it is natural to assume that it is on a linguistic basis that most syllabuses must be organized" (298). We need only to expand our present perception of the proper scope of language theory. Then the theoretical linguist who can re-think the concept of "units of language" can make a valuable contribution here, by proposing a principled means of replacing grammatical/structural units in a syllabus with notional/communicative units.

The second most common request for help concerns the related area of "special purposes" language materials. I refer here not only to the more traditional fields of career-oriented "Business French" or "Scientific German," but also to developing needs in such areas as "Spanish for Medical Personnel" or even "Automotive Japanese." There is now considerable theoretical activity in the field of English for Special Purposes, but even here most research seems to be "stuck in the lexicon." I believe that language theorists will find a receptive audience for their answers to broader special-purposes questions, such as "What are the highest-frequency sentence structures (or rules) in Commercial French, as over against Conversational French or Commercial English?" or "What are the typical cohesive ties of technological texts in English?"

A third market for language theory appears to be in the expanded study of "interlanguages," those unstable interim grammars or "approximative systems" (Nemser 1974) which learners continually develop, modify, and abandon on their way toward target-language norms. This is not, of course, an entirely new field, having captured the fancy of many applied linguists ten years ago when Selinker first coined the term "interlanguage." My study of the marketplace suggests, however, that interest in Interlanguage has not yet peaked, and that materials designers and classroom teachers remain strongly receptive to new theoretical suggestions in this field. Specifically, if I am reading the market correctly, the

next request will be for a new Contrastive Analysis theory, which would be capable of describing systematically the differences between learners' successive interim systems, compared with one another and with the target system. The greatest utility of such a theory would be in its application to problems of sequence and tempo in the language-teaching syllabus.

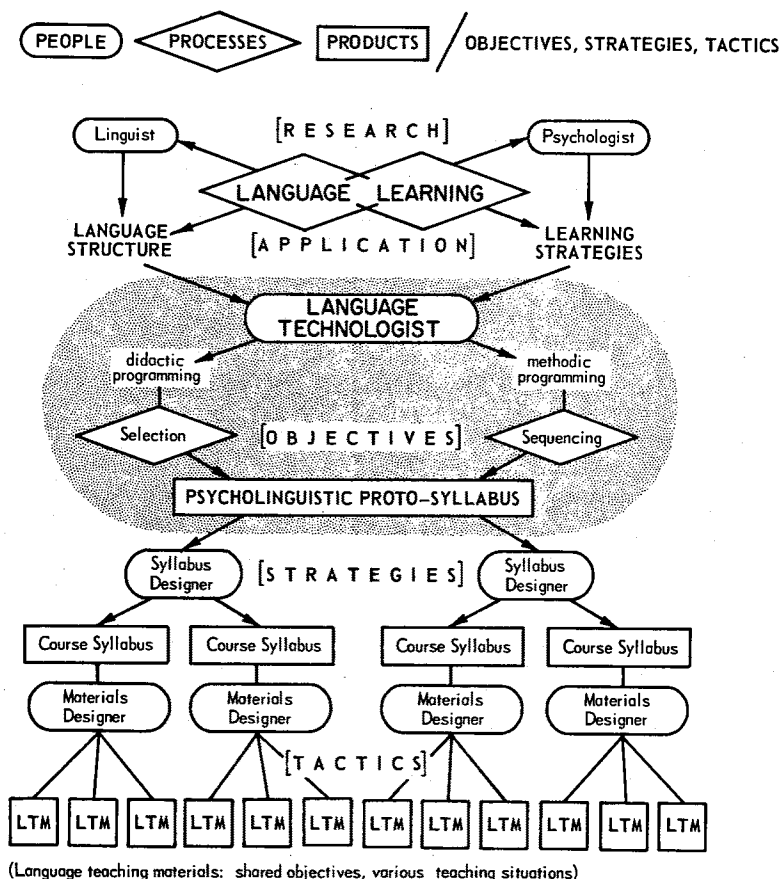
The issue of sequence in pedagogical materials brings me to two connected themes in recent journals and national conferences. Neither problem is a new one, but both are awaiting a definitive theoretical resolution. First, the choice of what shall precede and what shall follow, in the ordering of units in a language syllabus, currently owes much to the theoretical contributions of our friends in Psychology. A great deal has been suggested recently about "natural ordering" in both first- and second-language acquisition, and the suggestions are finding their way into textbooks and syllabuses. There appears, however, to be a shortage of similar input from linguists, whose different perspective on language learning could lead them to address such questions as: "Is there, in the structure of the target language, a linguistic dependence of item B on item A, such that A ought logically to precede B in the syllabus?"

For similar reasons, there appears to be a related market for language theory in the investigation of memory and review. If my perception is correct, most researchers currently investigating the relationship between human memory and verbal learning are what I call "sequential psycho-linguists": that is, they are "psycho-" first and "-linguists" second. As with the learning-sequence issue, there seems to be a need here for linguistic research, to address such questions as: "Is there a linguistic measure of inherent structural complexity, and, if so, can it predict ease of recall?" or "What is the connection, if any, between the number of rules required to 'generate' a structure, and the number of step-repetitions required for learner mastery of that structure?"

The newest theme I have observed is only just beginning to appear in pedagogical journals in the United States, but Canadian LACUS members may recognize it from several recent issues of the Canadian Modern Language Review. I refer to the investigation, by Stern 1975 and others, of the "successful language learners," whose progress in formal instructional settings is conspicuously superior to that of their classmates. The appearance in the very first ERIC Bulletin of a report on this research (Omaggio 1978) suggests a developing interest in what I would call "Success Analysis" (as over against "Error Analysis"). It is too early to be certain of the ultimate relevance of such study. I strongly suspect, however, that linguists who set out to investigate these "succeeders" will find a ready market for their theories, particularly if they can relate their research to the other themes I have suggested, answering such questions as: "Does the Interlanguage of the successful learner reflect unique systemizing tactics?" or "Do the 'quick-draw' learners, whose retrieval from storage is unusually rapid, apply 'recall rules' which are ordered differently from their acquisition sequence?"

It has been my intention so far only to suggest that language research of certain kinds would be well-received by those at the end of the theory-to-practice pipeline. In the space remaining, I would like to add some thoughts on the mechanism by which the results of language research are processed for application to teaching.

In the present system, as I understand it, most breakdowns between theory and practice occur at the syllabus-design level. Under pressure from materials designers and their publishers to provide "the latest thing" in theories, so as to keep textbooks up-to-date, syllabus designers have often provided their own hurried interpretations of whatever seemed currently fashionable in language research. Where these designers happened also to be trained in applied linguistics, the results were happy accidents of sound application. Frequently, however, the results have been heavy on buzz-words like "transformations" and "competence"--and light on substance.



In the preceding illustration, I offer a revised scheme of theory-processing, which adds a synthesizing, "technological" stage (note shaded area). Here, an applied psycholinguist I call the "language technologist" evaluates the results of current linguistic and psychological research bearing on language learning. Where his two inputs are mutually reinforcing, his output is incorporated into a "proto-syllabus." The syllabus designers are thus freed from the pressure to act as de facto theoretical critics, and they can now devote their energies to translating the proto-syllabus into a number of strategically defined course syllabuses, each of which can be further processed by a materials designer to yield tactically different language teaching materials.

To illustrate briefly, we can follow a representative theoretical insight into the structure of German. Imagine that a linguist has presented a cogent theoretical argument for deriving the definite article inflection from the indefinite article inflection, thereby reversing the traditional pedagogical sequence. The language technologist compares this argument with findings in, perhaps, Interlanguage studies, Success Analysis, and the like. His findings persuade him to adjust the sequencing in his proto-syllabus of, say, "Spoken German for English Natives."

Several designers then translate this proto-syllabus into strategically different course syllabuses, one of which might be for college students in banking and commerce. Finally, a materials designer converts this syllabus into Introductory, Intermediate, and Advanced teaching materials.

The details of my revision, however, are of less importance here than my belief that there is a place in this scheme for a new kind of linguist, and here we return to my first thesis. The proposed Language Technologist will be comfortable wearing three hats, while he listens to his language-teaching colleagues and speaks to both linguists and psychologists. The result should be the application of relevant language-learning research to genuine language-teaching problems. And we will then have an answer to the skeptical theorist I mentioned earlier, who doubted that "either linguistics or psychology has achieved a level of theoretical understanding that might enable it to support a 'technology' of language teaching" (Chomsky 1973:234). Fifteen years after that assessment, I believe that such a technology is due and is appropriate: the quality of present research will support it, the quantity of future research will require it, and a new breed of applied linguist can design it.

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WHAT IS A LINGUISTIC THEORY?

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Recently there have been a number of attacks on transformational - generative grammar as a theory of language. Gray (1978) in a survey of these attacks concludes that Derwing (1973) and Householder (1965) have not been successful in their opposition to the theory because they '... concede so much to the opposition that they have lost before they begin.' Gray then goes on to suggest that there are no successful competitors to transformational theory because the two central constructs of the theory, (1) the existence of a deep structure for every surface structure and (2) the idealization of language, are essentially irrefutable. Gray states these constructs as follows:

... (1) that for every apparent linguistic structure there exists a 'deep structure' where form and meaning do consistently correlate; (2) that every language is by nature an ideal construct of 'well-formed' sentences, a norm in relation to which the actual utterances of its individual speakers conform to a greater or lesser degree (1978:6).

Now, if, in fact, the entire transformational movement can be subsumed under these two constructs, then Gray may have made his point. But, however, even if he has made a valid point from the assumption that constructs (1) and (2) as quoted above constitute the sine qua non of transformational theory, it might be pointed out, that any linguist who holds these two principles can construct an indeterminate number of 'theories'. Chomsky himself has expressed disapproval of two such 'theories' -- the case theory of Fillmore (Chomsky, 1971) and the generative semantics theory of G. Lakoff and others (Chomsky, 1972). So the question to be raised is this: What is a linguistic theory? The next question to be raised then follows from the preceding question: Is transformational grammar a theory? No determination can be made of the assertion that transformational - generative grammar is irrefutable until these questions are asked and the answers are investigated.

The more general question on what constitutes a theory is one which the philosophers of science have dealt with extensively Hempel (1966) has suggested that any formulation of a theory must require constructs which make two kinds of principles explicit. These are: (1) Internal principles which '... are constituted of a set of systematically related statements descriptive of some phenomenon', and (2) Bridge principles which '... indicate how the processes envisaged by the theory are related to empirical phenomena with which we are already acquainted, and which the

theory may then explain, predict, or retrodict' (Hempel, 1966:72). Bridge principles connect certain theoretically assumed entities that cannot be directly observed or measured with directly observable or measurable aspects of the natural world such as human behavior which for linguistics would be human linguistic behavior or language. From Hempel's discussion, then, it would seem that a theory should be composed of three parts: (1) the epistemological base of the theory which determines what constitutes data and how knowledge is to be obtained, (2) the internal principles which constitute the very core of the theory, and (3) the bridge principles which relate the knowledge obtained according to the rules in the epistemological base to the internal principles.

From this it would appear that Gray's two constructs should be categorized as internal principles within the schema offered by Hempel. If these constructs are internal principles, they are essentially axiomatic in nature and not subject to direct refutation. Since this is the case, in one sense, Gray is correct, but in another sense, he is not because transformational theory may be inadequate in its epistemological base or in the bridge principles used to support these internal principles. The question then arises: 'What are the bridge principles in transformational theory which relate these internal principles to observable phenomena?' The answer to this question can be found in every language description that transformational linguists attempt and in every model that they construct in an attempt to explain linguistic phenomena. The bridge principles are those principles which allow the transformational linguist to make these descriptions. The answer to the former question can be found in the writings of the transformationalists and their critics.

For statementants on the epistemological basis of transformationalist theory, it would seem to be necessary to examine statements on the well-known shift in the philosophical basis of linguistics from empiricism to rationalism was made primarily to provide a philosophical basis for investigators from which they could appeal to the construct of innate ideas. However, it would appear that this shift in philosophical position has also affected the epistemological stance of the investigator. At this point, Chomsky is caught in a strange equivocation. When he writes, he writes as though he were an ardent empiricist. Lamb commented on this quite some time ago stating:

... in fact his [Chomsky's] practice in linguistic analysis, as demonstrated by his examples, is largely in conformity with the anti-mentalist principles advocated by Bloomfield and Twaddell, for he consistently adduces structural evidence in favor of his solutions (e.g. 'John's eagerness (*easiness) to

please') rather than 'explaining' features of structure by asserting that the speaker feels them to be that way (1967:415).

Chomsky himself lends credence to this interpretation of his work since he frequently appeals to 'empirical motivation' (cf. Chomsky, 1965:73, 99) or 'empirical justification' (Chomsky, 1970:204) in the solution of problems. It would appear that the empirical approach to knowledge is so important to him that he states:

Of course, it is necessary to stipulate with care the precise conditions under which complex symbols can be formed, at each level, or else the system of grammar becomes so powerful as to lose empirical interest (Chomsky, 1970:204).

It would appear to this observer, however, that Chomsky's position on empirical epistemology may have shifted over the years since now he appears to be interested in empirical epistemology only in a rather loose sense of the word. Anna Wierzbicka points this out in the following terms:

The question of the empirical validity of his (Chomsky's) constructs was crucial. At first, one criterion of empirical validity was thought to be provided by the concept of grammaticality: since Chomsky initially maintained that the distinction between grammatical and ungrammatical sentences was an intuitive given, he could in principle check his constructs against this datum. But of course he soon revised his theory on this crucial point, and came to claim that grammaticality, too, was a theoretical construct. ... Thus, despite its early empirical promise transformational grammar became increasingly unfalsifiable and unempirical (1978:120).

Chomsky himself as much as acknowledges the Wierzbicka complaint. In a comparison of the approach to data characteristic of advocates of the Ptolemaic view of the universe and the view of Galileo, he states the following:

Now, as a descriptive system, the Ptolemaic system was no worse than the Galilean system, maybe even a bit better, but it lacked depth of explanation. This shift of intellectual attitude from concern for coverage of data to concern for insight and depth of explanation, and the related willingness to deal with highly idealized systems in order to obtain depth of explanation — this shift of point of view has taken place very rarely, I think, in the history of thought.

In linguistics, I don't think it has taken place, really. Most linguistic work, for better or for worse, is concerned with accumulation of data, organization of data, making sure that any generalization isn't apparently refuted by some half-described phenomenon that someone noticed somewhere. (Saporta, Interview, 1978:311)

Chomsky has stated his position in such a way that any who would disagree with him seem to be in agreement with the Ptolemaic view of the universe. Nevertheless, whether the advocates of the Ptolemaic view took this or that position in reference to the data or whether Galileo took this or that position is a qualitative judgement. There is no question that Galileo removed himself from the data in somewhat the fashion indicated by Chomsky. But the real question is this: Just how far did he remove himself from the data? And a second question would be this: What sort of an analogy can be drawn between Galileo's approach to his data on the physical universe in the sixteenth and seventeenth centuries and Chomsky's approach to his data on linguistics in the twentieth century? In what ways are the situations similar and in what ways are they different? Wierzbicka obviously feels that Chomsky has gone too far in removing himself from the data; Chomsky feels that he and his colleagues have not gone far enough. Wierzbicka states her position in this manner:

Thus, in my view, autonomous syntax which postulates invisible underlying structures and rules is unacceptable because there is no reason to believe that (and no way to find out whether) they correspond to anything in the mind. It is of course acceptable as a purely intellectual exercise, as a game, as a more or less clever way of 'handling the data', but it is not acceptable as a theory of the human mind (1978:122).

Gross also complains about the fact that transformational linguists pay little attention to data collection. He mentions the 'anecdotal character of data in GG' (Generative Grammar) (1979:866) and then states:

It is virtually an absolute rule in all natural sciences that accumulation of consistent data precedes theoretical advances. Accumulating and classifying facts, and constructing a global image of the language under study, is the major experimental process, all the more in that syntactic problems have never been approached in this way (1979:868).

So then, it would appear that Chomsky, and with him, transformational - generative theory has divorced itself so far

from the data that it is no longer an empirical science. Nevertheless, Chomsky himself still seeks empirical validation for his theories. In a recent publication he has stated:

... The questions of initial structure and modularity are relatively straightforward empirical ones if we accept the propositions that they embody ... The issue of structure is not a straightforward empirical one, but it does have an empirical content. ... On the modular assumptions outlined, theses are obscure empirical questions, to be clarified and answered by empirical inquiry. ... Here there are real and significant empirical questions concerning perceptual categorization and its possible special relation to language. (Chomsky 1980:17, 19, 28).

Thus, it is apparent that, Chomsky wants empirical justification or validation of theoretical constructs but he is unwilling to describe his theory as an empirical rather than a rationalist theory. There is little in the early transformational writings to indicate that the epistemological basis of linguistics was to shift from empiricism to rationalism, but that has been the case since as Wierzbicka has indicated, the validity of the data is now a theoretical construct. Thus it would also seem that transformational theory is essentially unfalsifiable from the empirical point of view. Consequently, it is weak in its epistemological base and in need of radical revision.

From the preceding, it would appear that evidence used as data by transformational linguists is unfalsifiable and that, because of this, transformational theory cannot be classified as a theory which deals with natural phenomena. From here, an attempt will be made to examine candidates for bridge principles to see if transformational grammar qualifies as a theory from this basis. For the early transformationalists, one set of bridge principles involved the postulates which established the existence of kernel sentences.

By postulating kernel sentences and transformations, linguists hoped that a set of kernel sentences could be established for any natural language and that these kernel sentences could be transformed into all of the non-kernel sentences. It was also hoped that the kernel and non-kernel sentences would account for the sum total of all sentences in a language. From the start, linguists such as Gleason (1965) suggested that the postulation of kernel sentences and transformations for the description of all of the languages of the world was in error. The reason he gave was that such a strategy as this would be fine for a language such as English where agnation is important, but it would not be adequate for any other number of languages where such a grammatical process is not that frequent. After a number of years, Gleason turned out to be correct but for reasons that

he did not anticipate. Chomsky's adherence to the autonomous syntax position which he inherited from the Bloomfieldian structuralists and his subsequent espousal of Katz - Postal semantics emptied the construct of kernel sentences of all significance and all but destroyed the effectiveness of transformations in linguistic description or theoretical model building. Transformationalists themselves discarded whatever principles lay behind the use of kernel sentences and transformations in linguistic description. It may be of interest to speculate on how many important principles within current transformational theory may be discarded in the future. It may also be of interest to ask whether some of these principles may qualify as bridge principles in the sense of Hempel (1966). But in any case, the principles or postulates in the early transformational theory that required the existence of kernel sentences and their transformations can no longer function as a bridge between what is known and what is assumed.

Another of these bridge principles might be found in a construct which is closely related to Gray's first proposition insofar as it is used in the establishment of the deep structures which are uniquely represented to semantic structures on the one hand and to phonological structures on the other. Woiwetschlaeger (1976:5) has named this principle the univocality assumption.

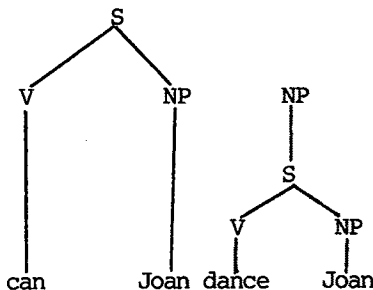
In his terms, this principle is described in this fashion: 'Given a syntactic constituent, there is exactly one semantic expression that specifies its meaning. (Woiwetschlaeger, 1976:5)' The author notes that such a principle is obviously false since any polysemous item can be used to disprove it as a true assertion; yet, this principle is necessary as a 'guide for any good descriptive practice.' From 'This principle, and others like it, the linguist builds towards the ultimate goal of 'constructing a linguistic theory' to 'explain how the grammar of particular languages can be learned' (Woiwetschlaeger, 1976:5). To arrive at such a theory Woiwetschlaeger finds it necessary to deal with polysemy - an aspect of languages and linguistic forms which give extreme problems to learners of languages. He then states that for the language learner each form must be unambiguous - thus attempting to muster support for his univocality assumption.

Nevertheless, it can be demonstrated that the univocality assumption is false, not only in a global sense as Woiwetschlaeger suggests but also in a theory - specific sense. Given certain modes of operating within the transformational model, the assumption that lexical items are not polysemous can be shown to be demonstrably untrue. For instance, in current conceptions of the nature of grammar, instances of polysemy manifested in any given lexical item are accommodated by using separate listings for any given form in the lexicon. These items

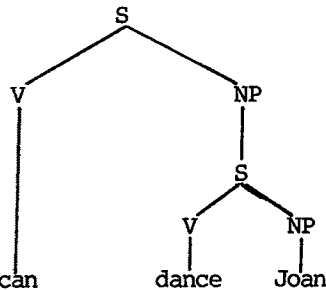
in their separate listings are then subcategorized by selectional restrictions so that they are disambiguated and marked for insertion in strings generated by the base component of the grammar (Chomsky, 1965 and Botha, 1968). This can be demonstrated from studies involving the modal auxiliaries in English. For instance, linguists such as Perlmutter (1968) and Ross (1969) who posit different underlying structures for the root and epistemic modals have created derivations which make it impossible to derive ambiguous sentences of this nature for the following reason: Let us assume that root and epistemic modals can be distinguished on the basis of syntactic criteria established by Hofmann (1966) and others. Let us also assume that the semantic correlates of these syntactic classes as established by Cook (1978) or Newmeyer (1975) are also viable. Then, there is a can-1 which is listed in the lexicon with the root meaning of ability and a can-2 which is listed in the lexicon with the epistemic meaning of possibility. (There would also be a can-3 which would be listed in the lexicon with the root meaning of permission, but for purposes of argumentation, it is unnecessary to reference it here.) In any case, at the point of lexical insertion, can-1 would be inserted in an underlying string which is generated so that it could be described by the structure illustrated by the tree at (7a) which would be descriptive of the first part of the sentence at (1a). Similarly, can-2 would be inserted in a string which is generated so that it could be described by the structure illustrated by the tree at (2b) which would be descriptive of the first part of the sentence at (1c).

- (1) a. Joan can dance very well. (ability)
 b. Joan can dance whenever she likes; she has my permission. (permission)
 c. Joan can dance whenever the spirit moves. (possibility)

(2) a.



b.



Now, if Joan can dance is in fact ambiguous in two ways between the epistemic and the root readings, that is, if the readings (1a) Joan can dance (ability) and (1c) Joan can dance (possibility) are indeed possible (and it would appear that they are), and if it is going to be possible for the grammar to generate an ambiguous surface string to account for these two readings, then the two strings at (2a) and (2b) must be made to coalesce so that a single surface string results. Transformational rules to produce such a coalescing would seem to be inelegant and, in this case, they may have to produce a phrase marker much on the order of (2b). If this is not so, that is, if a coalescing of the phrase marker at (2a) and (2b) does not produce a phrase marker very much on the order of the phrase marker at (2b), what does the phrase marker of the ambiguous string Joan can dance look like? How is it different from the phrase marker at (2b)? It would appear from this argumentation that current conceptions of the nature of transformational grammar such as those held by Perlmutter (1968), Ross (1969) and Newmeyer (1975) cannot provide for the generation of ambiguous strings for the reasons noted above. So then, the univocality assumption of Woisetschlaeger is obviously false as are all other constructs within transformational grammar which require separate lexical listings for homophonous forms which have apparent semantic differences. Since proposals for the writing of transformational - generative grammars up to the present time require an assumption such as the univocality assumption which is based on the use of separate entries in the lexicon for homophonous forms, it can thus be shown that these proposals cannot be descriptive of natural languages because speakers of natural languages can do what these grammars cannot do. They can generate sentences with multiply ambiguous lexical items. It would thus appear that at, this point, transformational grammarians are not describing natural languages. And it would also appear that the univocality assumption fails as a bridge principle, connecting what is known empirically to what is asserted theoretically.

In the sense that bridge principles build from the known to the unknown, another candidate for one might come from the now famous Chomskyan assertion that children learn language from an essentially 'degenerate corpus' (Chomsky, 1965). Evidently this construct is necessary as a bridge between an observable phenomenon, the kind of data that children use in the learning of a language, to the nativist hypothesis which has as its central tenet the fact that languages are essentially unlearnable. To support the nativist hypothesis, a foundation stone of rationalist linguistic theory, it is evidently necessary to assume the unlearnability of language in the face of overwhelming evidence to the contrary: Children do learn languages. But it has been assumed that they learn them from data which is essentially mal-formed; hence, the nativist hypothesis could be formulated. However, since 1965 when the

statement was first made, it has been conclusively demonstrated that children do not in fact learn from a 'degenerate', mal-formed corpus. Cross (1977:151-152), for example, has shown this in his studies. Ervin-Tripp (1973:207) has stated that:

The argument that input is degenerate, confusing, that the surface orders in English are displayed in so many permutations that simple order heuristics relating surface orders to meanings would be impossible, must be produced from observations of speech styles at conferences, not in family kitchens. ... input to children is characterized by repetitiveness.

Besides this, Snow (1977:36) through her studies has come to the conclusion that '... mother's speech to children ... is simple and redundant, ... it contains many questions, many imperatives, few past tenses, few co- or sub-ordinations, few disfluencies, ... it is pitched higher and has an exaggerated intonation pattern.' It would thus seem that Chomsky's initial statements were premature to say the least and they have also proved to be in error. Undoubtedly, such errors would not have been made if a principle enunciated by Gross had been followed; he states (1979:880): 'Linguists have been totally unaware of the converse of their rule, a truly Cartesian rule: there is no possible theory without concomitant accumulation of data.' But, in any case, it is apparent that one more candidate for a bridge principle in transformational theory has proven to be in error although there is no evidence that the transformationalists themselves have admitted the error. It would appear that the construct which states that children learn language from a degenerate corpus is still adhered to in one form or another by most transformationalists.

In conclusion, it may be that Bennison Gray is correct. All of transformational theory can be encapsulated within two constructs, which look rather like internal principles in the schema for a theory described by Hempel. If this is true, transformational theory is most vulnerable in the bridge constructs which are used to support the otherwise unaccessible basis of the theory because difficulty in formulating bridge principles seriously weakens a theory since, as Hempel (1966:74-5), points out:

Without bridge principles ... a theory would have no explanatory power. ... Without bridge principles, the internal principles of a theory would yield no test implications, and the requirement of testability would be violated.

A review of candidates for bridge principles reveals that in the past some of these constructs have been discarded as unworkable. Such is the case of kernel sentences and

transformations. It has also been shown that some of these principles are false in a theory specific sense as in the case of the univocality assumption. A similar statement could be made about Chomsky's assertion that children learn language from essentially 'degenerate' data. Finally, the whole concept of the testability of transformational theory is marred because of defects in its epistemology. It would thus appear that transformational 'theory' does not qualify as a theory in a Hempelian sense since there is a continuous lack of viable bridge principles. If then the answer to 'What is a theory?' includes in it the necessity for a viable epistemology, internal and bridge principles, then transformational theory does not qualify. Furthermore, there is no sense in arguing, as Gray does, that the central constructs of transformational theory are irrefutable nor in arguing that there is no competitor for the theory for as Gross so aptly puts it:

'Whatever its shortcomings,' it is said, 'it is the only tool we've got.' Defending GG (Generative Grammar) in this way is like defending the proposal to use chicken soup as a cure for appendicitis, by means of the argument 'It may not be a very good method, but we have nothing better.' (1979:875, note 10).

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SYLLABIC, MORPHOLOGICAL, AND PSEUDO-SYLLABIC BOUNDARIES

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Most linguists operate with the syllable and find it useful, indeed often indispensable, in both synchronic and diachronic work; every linguist knows, or ought to know, that the evolution of a vowel, for example, may best be stated with reference to its position at the end of an open or within a closed syllable: Lat. pa-trem > French père, but Lat. par-tem > French part. (I shall indicate syllable boundaries with a single dash -, morphological boundaries with =, and the coincidence of the two with ≡.) The non-linguist speaker also possesses the notion of the syllable, even if he cannot exactly define or delimit it. (Orthographic syllabation is usually irrelevant, especially in English, where it seems chaotic.) Hence I need not here argue once more against those few linguists who say that the syllable does not "exist". It is true, however, that not all syllable boundaries have always to be signaled by the speaker through appropriate markers (terminal allophones, articulatory breaks, pauses, etc.), except of course in prepausal syllable codas and postpausal onsets, which are signaled automatically by their position.

In a book of mine published in 1970, I defined the syllable as a purely phonological unit whose locus is, not the lexeme, but the phonological word, whatever its extent: it may be coextensive with a lexeme, or (and more frequently) with a group of lexemes (which I called *nexus*), or with a group of lexemes bounded by phonological pauses (which I called *cursus*, and of which the so-called *breath-group* of Modern Standard French is an example). This phonological word, which I generically called *section*, behaves phonologically like a single lexeme in citation form, having, for example, boundary signals with the proper postpausal and prepausal allophones, and the appropriate prosodic properties, say, a single (primary) accent, even though the constituent lexemes in citation form bear severally individual accents. Languages differ typologically in the formation and composition of their sections.

Within the section, the number of syllables is equal to the number of phonological vowels, and syllable boundaries are determined according to the distributional rules (phonotactics) of the language under scrutiny, such that the syllable onset must be a permissible postpausal, and the syllable coda a permissible prepausal phoneme or group of phonemes, with both onset and coda referring not only to consonants but also to vowels (so that, for example, in English /æ/ cannot conclude, and /ps/ cannot begin a syllable). In addition, the syllable division has to obey the principle of maximal consonantal onset and minimal

consonantal coda. This in fact means that as many syllables as may phonotactically be open must appear open in the linguist's analysis, and that groups of consonants must be divided in such a way that as few consonants as possible form the coda and as many as possible the onset of two adjoining syllables. But since, as I noted, the locus of syllabation is the phonological word, it is also implied--and this is most important--that syllabation disregards morphological, including lexical, boundaries within the phonological word, resulting in English mou-l-dy, pru-dish, mou-s(e)trap, although the morphological boundaries are clearly at another place: mould=y, prud(e)=ish, mouse=trap; and French /o-ze-ta-zy-ni/ is the correct syllabation of aux États-Unis.¹ The discomfort that English (but not French) speakers may feel at some of the instances of non-congruence of syllabic and morphological boundaries--if the syllabic boundaries are actually signaled--will be one of the topics discussed below.

Whenever a phonological word appears to resist syllabic division according to the rules I proposed, in the sense that no permissible onsets or codas result, I have found it to be always the case that the recalcitrant item is either a phonologically non-naturalized loan (a title which includes also so-called learned words, or archaic words), or an innovation that could not be accommodated in the current rules but which may betray an incipient change in phonotactics. For example, Spanish transcribir, can be syllabized neither (a) tra-nscribir, nor (b) tran-scribir, nor (c) trans-cribir, nor (d) transc-ribir, nor (e) transcr-ibir: in (a) and (b) the onset of the second, and in (c), (d), and (e) the coda of the first syllable are non-permissible; but the non-learned, naturalized, and occurring (f) tras-cribir allows phonotactically correct syllabation; on the other hand, French je suis is often pronounced with a "non-permissible" postpausal cluster /ʒs/--which, however, is gaining currency and may be used without its endangering a Frenchman's socio-linguistic standing, thus presaging a change in phonotactic rules. There is no reason why, among all the features of language, syllabation, since it is based upon the diachronically unstable rules of phonotactics, should not undergo diachronic change, which of course does not happen from one day to the other and is accompanied by a temporary condition of socio-linguistic uncertainty, which in turn is reflected by the difficulty of formulating rules that encompass all the phenomena that one may actually observe. According to my syllabation rules briefly outlined, then, the division is see-ing, ha-ting, but las-ting (because /ʒ/ does not occur prepausally, nor therefore syllable-finally, in English). It is obvious that in seeing syllabic

1. All this is stated in detail, supported by synchronic and diachronic evidence from various languages, and illustrated by many applications to simple and problematic cases, in Pulgram 1970. For an application of the theory to the system of Latin-Romance prosodics and metrics, see Pulgram 1975.

and morphological boundaries coincide, whereas in ha-t=ing, las-t=ing, and the earlier cited mou-s(e)=trap they do not. Nonetheless, also the non-linguist speaker will most likely place the syllable boundary in ha-ting and las-ting where I put it, and not at the morphological division, which no doubt he recognizes since it detaches so frequent a morpheme as =ing. I suppose that what prompts him to do so are not the linguist's rules but intuitive phonotactic constraints: the /e/ of hating can, the /æ/ of lasting cannot terminate an open syllable. He will, on the other hand, refuse the syllabation mou-s(e)trap, although /au/ may terminate a syllable, and prefer, if he marks a boundary at all, to set it between the two lexemes mouse=trap. This still results in a permissible coda /s/ and a permissible onset /tr/, but it violates the principle of minimal coda and maximal onset, which I established for good and sufficient synchronic and diachronic reason. In so dividing the word, the speaker does here, I suspect, what he does not do in hating and lasting, namely, let the morphological boundary prevail; and the different treatment appears to be due to his being inclined to pay less attention to morphological boundaries affecting bound morphemes, like =ing, =y, =ish, than to those separating free morphemes, as in mouse=trap: the former do not, the latter do possess lexical individuality. Yet the speaker will no doubt believe, and some linguists may join him, that in cases like mouse=trap the syllabic boundary lies exactly where the morphological one is. I shall discuss this dilemma presently.

As noted, the speaker is not obliged to mark morphological boundaries acoustically any more than syllabic boundaries, not even in lexical compounds consisting, like mousetrap, of free morphemes and having but one (primary) accent, e.g., orange juice, bookcase, often pronounced oranjice, bookase, a telescoping made possible by the disregard of the composite nature of the item. Indeed, in some cases the speakers, even linguists, may be ignorant of the presence or the place of a morphological seam, as in helico=pter (Greek ἑλικῆς, gen. ἑλικῆος 'spiral', and πτερόν 'wing'), pros=ody (Greek πρός 'according to', and ὕμνος 'song'). The insertion of syllabic boundaries in orange-juice, book-case, helicop-ter satisfies also the non-linguist speaker; in the first two, because they coincide with lexeme boundaries, in the third, because the speaker, even if he should recognize the morphological boundary, intuitively agrees with the linguist on not putting /pt/ in syllable-initial position. But these agreements are clearly accidental rather than due to the speaker's observance of the linguist's rules. As regards pros=ody, where the prefix will more likely be identified as from Latin pro than from Greek πρός, and pronounced with closed /o/, the syllabation pro-s=ody, though clashing with the true morphological boundary, follows the rules and will be acceptable also to non-linguists; but if the first vowel were /ɔ/ (and both pronunciations are possible in English, like those of progress, propaganda), I should have to divide pros=ody (since /ɔ/ cannot occur syllable-finally)

and once again risk, were the syllable boundary to become audible, discomfort and disagreement, certainly from the layman, and possibly from one or another linguist.

In a compound like mouthwash, however, the syllabation mou-th=wash (with a coda as in now and an onset as in thwart, thwack) will appear well-nigh unbearable or even ludicrous, more so than in mou-s(e)=trap, because thw- is so much rarer an initial cluster than st-. Now since the syllable boundary does not have to be signaled, I do not really ever expect to hear anyone say mou-thwash out loud. If any boundary were to be marked acoustically at all, it would be the morphological one separating mouth and wash, for the reasons earlier stated when I spoke of mou-s(e)=trap as contrasted with ha-t=ing. But since the articulatory means and the auditory impression are exactly the same for the signaling of a syllabic and of a morphological boundary, one is easily tempted to declare that the morphological boundary in mouse=trap and mouth=wash is also the syllabic one. In this some linguists would join the non-linguist speakers. Yet I should insist that we must not do this, that we must indeed syllabize mou-s(e)=trap and mou-th=wash, and, by the same token, dee-p=ly, coa-l=oil, soa-p=opera, bee-f=eater, an-t=eater, si-d(e)=walk, wal-k=ri(gh)-t=in, spea-k=up, pea-s=an-d=rice (provided the last three are, as of course they may be, single phonological words with but one primary accent).

One cannot deny that if signaling of a boundary occurs at all in these and similarly constructed phonological words, it is the morphological and not the "unnatural" syllabic one that is rendered audible. To it I assign the term pseudo-syllabic: it is not a true syllabic break as defined by phonological, phonotactic rules, but it sounds like one.

This view has repercussions also on the question, usually phrased in terms of juncture, whether night rate and nitrate, grade A and gray day, why choose and white shoes are or are not pairwise homophonous, or whether the members of each pair contain appropriate allophonic terminal signals to permit their being distinguished in discourse. My answer has to be that if each is regarded and pronounced as a single phonological word with but one accent, then, since morphological boundaries are obliterated in the resultant nexus, and since syllable boundaries ignore morphological boundaries, ni(gh)-t=rate and ni-trate, gra-d(e)A and gray-day, why-choose and whi-t(e)=shoes are indeed homophonous. If, however, the speaker makes of night rate, grade A, gray day, why choose, and white shoes sequences of two phonological words, each with its accent, the difference between the members of each pair will become audible because boundary signals, whatever their phonetic nature, will be made. What I am in fact saying is that the original question, homophony or non-homophony in the pairs, was badly put; the speaker has an option, and either answer will be correct. Indeed, I venture to suggest that the feature of optionality, beyond the so-called free variation on various levels, has been neglected in linguistic studies intent upon discovering hard and fast rules.

What is often forgotten is that the homophonous pronunciation of why choose and white shoes, and the rest, is of no disturbance in real discourse: the context--and I mean situational as well as linguistic context--removes possible misunderstanding. (Except are puns, whose aim it is to devise a linguistic utterance suited to more than one context.) Linguists often wish to make a point by means of examples outside of a context, which is pointless; and recent discussions of "context-free" utterances are fatuous: there is no such thing outside of the writings of uncomprehending linguists.

To a speaker of French it would never occur that the phrase, or phonological word, or cursus, aux États-Unis can be syllabized any other way than /o-ze-ta-zy-ni/, with total disregard of morphological or lexical boundaries; and if he does not signal syllable boundaries, he most certainly does not signal lexeme boundaries, which has as its consequence that peculiar staccato, syllabic articulation of French, sometimes called syllable-timed as contrasted with the stress-timed rhythm of English, so that a non-francophone listener cannot lift the component lexemes out of the stream of speech. This is so because a Frenchman has a cursus language which is not spoken in lexemes but in phonological words. (On occasion a single lexeme may constitute a phonological word, as in "Merci.", or "Silence!". But a purportedly phonetic or phonemic transcription of a French utterance that retains the blank spaces of ordinary writing and printing between all lexemes, is senseless--though even some linguists, even in textbooks intended to teach students how to pronounce French, remain unaware of this absurdity.) The speaker of English, however, does speak in lexemes; and though often two or more lexemes are tied together phonologically in a nexus, he finds it difficult to get away from the notion that, while nitrate is one item, night rate must be two items. (Orthography cannot be expected to help him much, and it does not: night-rate, night rate, and nightrate are all acceptable, and surely walk right in could hardly, despite its phonological unity, be felt as anything but three items even by the illiterate.)

Now one may ask, and I have been asked, why I insist, seemingly against nature, and certainly against many speakers' intuition and Sprachgefühl, and in defiance of what one may actually hear, on placing some syllable boundaries where they will never be heard, and refusing to place them where an articulatorily and acoustically identical signal, usually at a morphological seam, can be heard. My answer in pragmatic terms is that in both synchrony and diachrony I have found that this kind of syllabation works best and delivers the most convenient statements and most cogent explanations, despite its occasional apparent "unnaturalness". In terms of methodology, we are obliged to make up our minds as to what kind of unit we want the syllable to be. I have opted for its being purely phonological, for only by locating it on a given level was I able to define it and construct rules on how to delimit it, rules which had to be, to be sure, like everything else in linguistic

analysis, language-specific. Wavering between now phonological now morphological boundaries is neither methodologically sound nor conducive to an orderly statement. That the rules as I suggested them suffer exceptions, that not everything can be totally explained through them, does not greatly disturb me, though I regret it. But all linguistic rules suffer from this weakness, unless the corpus from which they are derived has been subjected to Procrustean surgery, stretched or lopped to fit it onto the linguist's tidy bed--though a degree of untidiness is, of course, a characteristic of all human behavior. Linguistics is not astronomy or physics or chemistry; and while we must pursue linguistics scientifically, that is, intelligently, logically, and with due regard for empirically accessible data, it does not follow that we must arrive at laws like those of the natural sciences. As Sapir long ago phrased it: All grammars leak.

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WHAT'S GOING ON: A DYNAMIC VIEW OF CONTEXT IN LANGUAGE

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My basic concern is with the relationship between text and context of situation. But 'context of situation'--and sometimes just 'context' or 'situation'--mean different things to different people; I believe my use of the term to be in keeping with the Malinowski-Firth-Halliday tradition. The half century between Malinowski (1923) and Halliday (1974a) has seen a radical shift in the notion, in precisely the direction in which Firth (1950) seems to have pointed it. For Malinowski context of situation was just that: the situation con text. For Halliday, following Firth, it is an abstraction; and if situation may be said to accompany the text, then this is more by virtue of the functional nature of language than by virtue of any physical spatio-temporal co-occurrence of the two. The word 'accompany' has undergone an important re-interpretation. Halliday's context of situation (1977; 1978) captures what Goffman (1975) refers to as the 'motivational relevancies' in as much as they bear upon the talk in all its aspects. The interaction as it unfolds through the mediation of the various modes of meaning--verbal and non-verbal--is an evidence of such relevancies. It, therefore, provides a direct or indirect account of its creators' answer to the question: What is it that's going on here?

The racy idiomaticity of everyday usage might here deceive us into thinking that the question is a simple one, calling for an answer obvious to all. But as several scholars have pointed out we are faced with an inherent indeterminacy; at any time that the question is raised, the answer to it can always be some other than that which is given, for there is a considerable latitude in the interpretation of 'what', of 'here' and of 'going on'. Obviously, then, none of the answers is a 'slice of reality' as is physically present here and now at the time of asking; rather the answer must refer to some elements abstracted from some slice of reality somewhere in some domain of experience. The reality captured by the answer is filtered reality, and the active agent, here, is the interactant--it is his focus that informs the answer. So, although the answer may be rooted in the objective, its point of departure is the subjective one. According to this line of reasoning, then, the word 'situation' in the expression 'context of situation' refers to that part of reality which is filtered through the interactant's focus upon some aspect of his environment. Were we to leave the story off at this point, each context of situation would appear to be a unique creation by a

unique individual, and what could be more gratifying than the belief that one's self is indeed the centre of the universe?

However we do have to take into account the fact of interaction, the presence of which argues that the subjective must somehow be turned into the inter-subjective. Perception, individual focus, one's own view of what is relevant--these are private things. To be shared they must be made public; and some form of sharing there must be as that is a necessary condition for the unfolding of interaction even where deception is involved. The means whereby the private is rendered public is provided by the semiotic codes. My focus on the situation can become your focus on the situation--if I so wish--because common to us is some means of representing that focus. A shared situation is by definition a coded situation--a fact to be kept in sight whenever we are reminded of the uniqueness of individual experience. For if emphasis on the subjectivity of focus highlights uniqueness, the need for coding functions as a corrective, indicating the limits on this uniqueness: whatever can generally function as a medium of communication must necessarily be a system of social conventions. So what is shared between individuals is conditioned not only by the unique identities involved; rather the filtering of reality is two-fold. Reality is thus and thus because I see it thus and thus but the other's perception of my perception of the thus-ness of reality must be filtered through the coded message, being in this process conditioned by the nature of the code. And more important still, this sharp division between the individual and the social, the unique and the conventional, is perhaps only an artefact of our analysis. For even though we may choose to begin with the individual, there is an important sense in which he can be seen as a being that is actively shaped by the sum of his own interactions and hence by the nature of the semiotic codes prevalent in his community (Bateson: 1942; Whorf: 1956; Bernstein: 1971).

The total set of semiotic codes in a community serve to define the nature of the 'world' for its members. Each code has a role in the mediation of meanings but it would be naive to imagine that there are no differences between the codes. I would suggest that distinct semiotic codes carry distinct representational capacities; the accounts of recent research in non-verbal communication would certainly appear to support this hypothesis (Argyle & Kendon: 1967; Argyle: 1972). Clearly, despite overlaps, what can be said through the resources of the verbal code is not co-extensive with what can be 'said' through the gazing code or the gesture code or the code of dress. But in my view the difference between the codes goes beyond the matter of 'how much' can be said; it extends to what may be described as the partiality of a code to certain kinds of relevance (Bateson: 1968). For it would appear that the functional nature of each code predisposes one to the encoding of certain relevancies rather than others. so, the gazing code must convey an

interpersonal type of meaning, and it would be a mistake to imagine that either gaze-avoidance or the 'impersonal look in the eye' fail to convey some meaning. Certainly when it comes to the filtering of the interactive situation through the verbal code, there would appear to be certain aspects which--by the nature of the code--are treated as being relevant--as being a part of the interactant's subjective focus. Whatever else an interactant may attend to or not, these are factors which he cannot choose to ignore; his conception of what is relevant to the interaction must contain these elements within it:

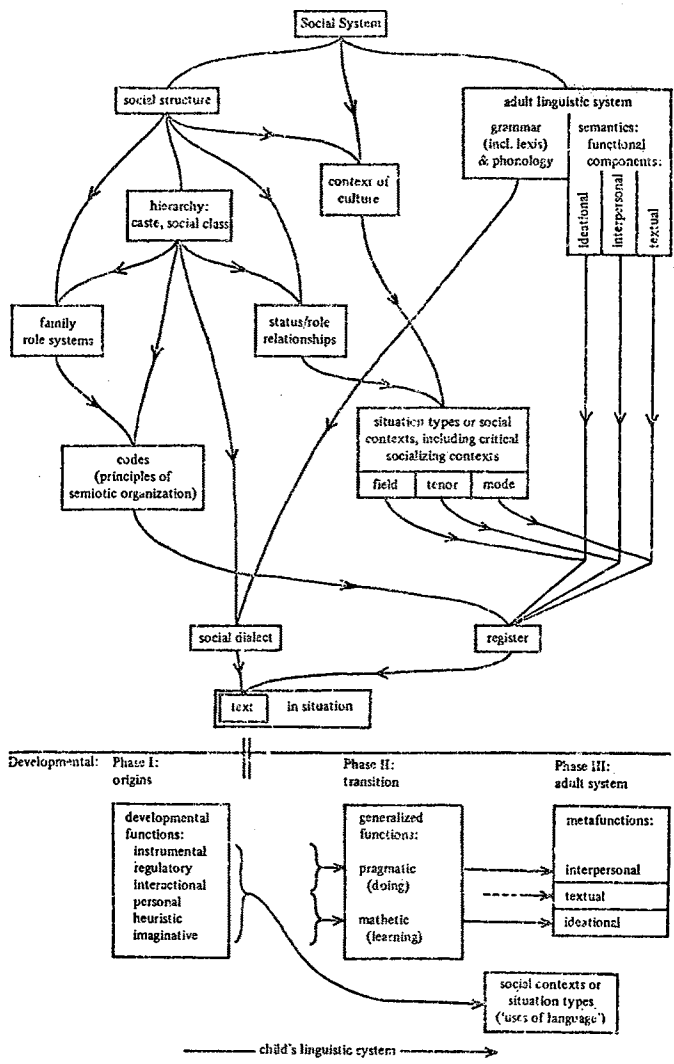
- i: the nature of the social process--what is being achieved through the acts of verbal meaning;
- ii: the nature of the relationship between the interactants;
- iii: the nature of the mode for message transmission.

These factors correspond to Halliday's terms--field, tenor and mode of discourse. In principle it is possible to break up this tripartite set in different ways (Gregory & Carroll: 1979; Martin: 1979; Hymes: 1968; 1972; Hasan: 1973); I have followed the Halliday schema because it appears to be the most highly motivated, being placed simultaneously in relation to both the social system and the verbal code, as displayed in figure 3.

The figure presents some of the most important elements which influence verbal interaction, while providing a theoretical context for the interpretation of the expression 'context of situation'. In what follows I shall restrict myself to a small corner of this broad canvass, dealing only with certain aspects of context and text as if all else were equal.

If we accept the view of context of situation which I have presented above and which is schematically presented in Figure 3, certain things follow. In the first place, we must make a distinction between what I am referring to as 'context of situation' and the actual physical setting in which a text might unfold. Let me refer to the latter as 'material situational setting'. The material situational setting always includes elements that are not part of the context of situation; this is the reason why the question: what is it that's going on here? has so many legitimate answers. The overlap between the two can vary according to the role that the language plays in the unfolding of the social process; when the process is defined by reference to language--e.g. seminar, lecture, lyric--then the material situational setting in which the text actually gets produced may be largely irrelevant to the text. Someone producing an advertisement for publication must sit somewhere at some time in or out of others' company; but these aspects of the material situational setting need not impinge upon the text in any way. By contrast, if the role of language is subsidiary, the social process being defined without reference to language--e.g. moving furniture around in a room--then elements of the material

FIGURE 3 (from Halliday: 1974b)



situational setting are likely to be actively picked up as the ingredients of the context of situation. In principle we can think of the material situational setting as a dormant source for affecting the verbal goings on. Elements of this dormant source are available for activation; it is a different matter whether such activation would entail a change in the context of situation or not (Hasan: 1980). I shall return to the role of the material situational setting in determining the nature of the context of situation for the observer at a later point.

The second thing that follows from my view of the context of situation is the nature of the relationship between it and text. If context of situation is an account of the interactant's motivational relevancies, then it must be seen as a dynamic force both in text creation and text interpretation. It is a pre-requisite of all language use, not an ad hoc a-theoretical notion that one can appeal to when it suits one's convenience or in as much as it suits one's convenience, as in most speech act analyses (Sbisa & Fabbri: 1980). I would like to dissociate myself from that use of the term context which treats it as the explanation of whatever cannot be explained through the analysis of the form of the message; for such a use of context is hardly any more viable than that of performance. And in any event there exists a catch-all phrase in the expression 'knowledge of the world' which is surely a wide enough basket to take in any number of failures of analysis. That context is pertinent to interaction is a widely held view; in recent years its relevance to specifically the verbal aspects of interaction has received a great deal of attention. However, most studies have approached the analysis in terms of the sequencing of speech acts, thus concentrating on what is often referred to as micro-analysis of interaction (Dore: 1979; Labov & Fanshel: 1977; McTear: 1979). Yet another recent development is the attempt to synthesize both the micro- and macro-analysis (Sinclair & Coulthard: 1975). Such studies have contributed a great deal to our understanding of text construction and text interpretation.

In my own work I have argued that context can be seen as the major determinant of the defining characteristics of text genres (Hasan: 1973; 1978; 1979; 1980); given the nature of the context of situation--the contextual configuration--we can predict the crucial semantic elements of the embedded text as well as the permitted range for the over-all message form. For example if we know that the social process is that of advertising, this simple fact permits us to predict that the message form must contain an element of structure whose function it is to attract attention. Let us refer to this element of text structure as Capture; it is this element that is realized in the written mode through the management of the visual lay-out, the type face patterns and/or the presence of pictures; and in the spoken mode through the introduction of music or other acoustic effects. Further the

tendency of advertisements to use pun--Go to Work on an Egg--, alliteration--Top People Take the Times--, and such apparently preposterous locutions as Go jump in a New Zealand Lake is functionally motivated; they are there as (part of) the realization of the element Capture. A second obligatory element of structure may be referred to as Focus. The crucial semantics of this element is to single out that which is being advertised. The caption Go Jump in a New Zealand Lake adorns the top of a picture of a beautiful lake; underneath the picture a discrete legend announces Air New Zealand. This is the Focus of this particular advertisement. The beauty of New Zealand as displayed by the picture constitutes the Justification for the Focus. Space does not permit a more detailed account of other elements of structure for an advertisement; but hopefully this brief introduction lends support to the hypothesis that the contextual configuration can be used to predict the structural potential for texts belonging to specific genres. The notion of appropriacy would be inapplicable to text without the prior assumption that the meanings of the text are controlled by context. And by the same token, the ability to infer the contextual configuration of a text is an essential part of its interpretation; if we read Go Jump in a New Zealand Lake as a gratuitous insult, we are certainly far from interpreting the text successfully. Thus the relationship between text and context is two-fold for the acculturated reader: if we have access to the context, we can predict the essentials of the text; if we have access to the text, then we can infer the context from it. In both cases we proceed from that which is present to that which is not present but which stands in some causal relation to the former.

The above view of context is often seen as normative (Sbisa & Fabbri: 1980; Cicourel: 1980) and as such undesirable for the following reasons:

- i: that it implies the presence of a social contract;
- ii: that it postulates an ideal for human behavior;
- iii: that it does not permit variation;
- iv: that it denies individual autonomy; and
- v: that it presents context as a fully evolved object prior to the creation of the text, while the fact of the matter is that contexts and texts evolve together.

Let me deal with the first two objections very briefly. The recognition of a norm does imply the presence of a social convention; we may use the metaphor of social contract to refer to the fact that members of a community follow a set of conventions which are essentially arbitrary in nature, but in saying this we claim no more than that the actual practices of a community indicate how a convention should be read--and this includes the reading of all its values, not just one. A convention is made legitimate through practice, not through amicable discussion as the metaphor of social contract might some times mislead us into

thinking. The actual practices of a community are often a means for the categorization of its members; this is borne out by the researches of anthropologists of very different ideological persuasions. I would suggest that the concept of power in sociology is closely related to the concept of norm; however to describe norms is not to side with the group wielding power any more than to describe working class dialects is to bring about a social revolution whose benefits are reaped by the downtrodden. The recognition of norms would be misleading if, for one reason or another, a scholar chose to ignore the presence of conflicting norms; but such shortcoming does not invalidate the concept of norm itself; what it does invalidate is that particular account of it.

Nor does it appear to me that norm entails idealization of relevant behavior. Some idealization must always exist in any general statement, and when we talk about occasions of talk and how people tend to act verbally on such occasions we must make an effort to distinguish between what is inside the frame, what outside (Bateson: 1955; Goffman: 1975). But with reference to the occasion itself, it is not necessary to postulate one invariant mode of behavior as the only correct possibility. In fact the question of evaluation need not enter into the concept of norm, for a norm may be established on a purely statistical basis; to say that something happens typically is not to claim that it is therefore good, or beautiful, or correct. Nor does it necessarily entail a monolithic view of 'it' whatever that may be: variants do occur, i.e. are normal but it is also normal for variants to occur systematically. These points have been argued admirably by Labov with specific reference to language (Labov: 1966; 1972); and there seems little reason to suspect that behavior in other semiotic codes--or at a different level--is radically different. Norms of behavior have little to do with the kind of idealization entailed by theories of innate competence, which logically involves but one blue-print; instead norms of behavior in specific contexts of situation are more readily relatable to the notion of acculturation. In not a few communities, bargaining is the norm for the occasion of buying and selling; in others the fixed price prevails. Neither is ideal behavior; but we would think that a buyer who tried to bargain in Saks is certainly being atypical while refusal to bargain in an African shop was once described to me as 'somewhat insulting to the shopkeeper' by one of the shopkeepers himself. Thus in my view, the confusion of norm with idealization is based on a misconception: the typical is only the most frequent--it therefore is bound to be socially significant--but it is not obligatory as a reflex action is or as behavior which is genetically pre-programmed might be. Judgements about the appropriacy of some piece of behavior always make appeal to a culture and this appears entirely consistent since specific contextual configurations are only culturally validated (Goffman:

1975; Bateson: 1955; Hasan: 1975; 1980; Malinowski: 1923; Firth: 1950; Halliday: 1974b).

Obviously then if context is being employed as the rationale for a prediction of the typical patterns of behavior, this is not tantamount to a claim of absolute determinism. Although invariance may be said to imply typicality, the reverse is not true; typical behavior is not invariant behavior even within the context of the same culture. But to claim that variation can happen anywhere anyhow any time or that the individual is equally free to negotiate a situation in all environments is to vulgarize the notion of both variation and individual freedom. Even those scholars who talk most about the individual's negotiation of context, use the habitual tense, which one might argue gives a lie to the overt rejection of norm! But it may be useful to think of variations as falling into two major categories: those which are within the system and those which are external to it. Examples of the latter type are such happenings which are often interpreted by the members of the community as 'disruption', 'interruption', 'postponement', etc. while a sub-category of this type of variation is composed of pathological behavior, arising from whatever cause. Of these, disruption--or at least some forms of it--would appear to be the most complex as it is here that distinct foci on the situation have to operate side by side, with the participants inhabiting distinct universes simultaneously. Variations which are within the system have been described (Hasan: 1980) as arising from the local, non-criterial properties of both the text and the context. What one says now influences what one might go on to say next; this is obvious from the readiness with which we note mixed metaphors, inconsistencies and 'forgettings' in our own speech even as we are speaking. There is a sense in which the processual nature of the text is an important source of its uniqueness. Equally important is a second fact: each contextual configuration is indicative of a range of possible behaviors; it "tells the organism among what set of alternatives he must make his next choice" (Bateson: 1964); it does not detail what each particular choice must be. A third point that needs to be taken into account in the consideration of variation in behavior is the flexibility of the notion 'context'. It is perfectly obvious that specific contexts cannot be hermetically sealed off one from the other; nonetheless, it is also an empirical fact that we recognize 'different' contexts. I have argued that each particular category of context contains elements whose presence or absence is non-criterial to its identity (Hasan: 1980): for example, the identity of the context 'shopping for food in a personal service store' does not alter either because of how well one knows the store-keeper or what particular goods one buys. But these are certainly the elements in the context of situation whose presence or absence correlates with difference in typical behavior. If the store-keeper is well known to us, we would normally--i.e. without 'good reason'--not start off on our business of shopping without some sociability

(Hasan: 1978; Ventola: 1979), though of course there is nothing to prevent us from being unpleasant, snobbish or eccentric--except perhaps the weight of social opinion and the part it plays in the formation of our egos. Thus it is obvious that there are variations in behavior within the same context which are susceptible to systematic explanation in terms of more delicate details in the field, tenor and mode of discourse.

Let me turn now to the question of individual autonomy. It is well to recognize that there is a close relationship between individual autonomy, variation and acculturation: variation is a constant of learnt behavior and individual autonomy operates only in the realm of learnt behavior, not in that of automatic, genetically controlled activities. A hypothesis about the relationship between text and context must provide a systematic account of both variant norms and individual autonomy not because failure to do so is reactionary, but because these concepts are essential to our understanding of how contexts, behaviors and cultures are related to each other, and how any change ever occurs in any of these. But what does individual autonomy mean? None of us is ever totally free (Douglas: 1966); this is truer still in interaction. The very recognition of the other's identity is a constraint on our own; and while it is true that to have the speaking turn is to have power, it is perhaps no less true that to be speaking is to be vulnerable: there is good folk wisdom in the saying that if speech is silver, silence is golden. To speak is to declare our relationship to our social universe; even if we flout authority, ignore peer relation, construct a new set of rights and obligations for roles with old labels, we still take cognizance of the social mores around us, for these roles and relations have already been defined without reference to our own specific individualities. Thus individual autonomy cannot mean total lack of social constraint. However, in the present context it may be reasonable to suggest that individual freedom consists in freedom to negotiate a frame of relevance--a context of situation--for interaction. That one has this freedom is quite evident. But to claim just this much is not sufficient since it is equally evident that this freedom to negotiate contexts is not equally available to all at all times. Rather, there are certain environments which permit such negotiation more readily than others and certain roles allow one to exercise this privilege more than others. So the more interesting question is: how can these environments be characterized? Obviously the answer would bear relevance to whether text and context evolve together or whether some perception of relevancies must precede text construction in real time. If it is true that the subjective focus is made inter-subjective through the mediation of the semiotic codes, then it would follow that wherever the context is individually negotiated, it must evolve with the text, since the verbal code would itself play a crucial role in mediating the frame of relevance.

Before answering the question raised above, let me first say what I understand by individual negotiation. For me this concept centres round two considerations. In the first place, negotiation implies face-to-face interaction; thus the concept of negotiation is not applicable to those contexts which have a monologic mode. Secondly, negotiation of context implies that one party to the interaction could not have predicted the nature of the context with a significant probability of being correct without the benefit of access to what the other party is saying. Individual negotiation is a meaningful concept only if the negotiated context is not directly supported by the weight of conventionally interpreted environment. Therefore, if we can characterize those environments which as they stand permit us to predict with a significant probability of being correct what the frame of relevance is likely to be for the embedded interactions, then we shall have located the very domain in which individual negotiation of context has the lowest probability of occurrence. This is where by implication individual autonomy would be under strain; and variation in behavior would be highly systematic. I suggest that such characterization of environments is possible; and that it can be made in terms of the three factors--field, tenor and mode--which were introduced earlier.

Recall that in contexts with monologic mode, the possibility of individual negotiation does not arise. Interactions embedded in such contexts do not present a genuine possibility of turn-taking; hence there is no co-operative negotiation; rather, there is from the interpreter's point of view a presentation of the context as a fait accompli. Typically the text is so constructed here as to verbally encapsulate its own context maximally, and barring the inherent indeterminacies of the verbal code, the reader/listener is presented with a frame of relevance which is now an integral part of the text. I would suggest that for texts in the monologic mode, the maker of the text must proceed from some notion of his frame of relevance. That is to say, in real time, context must precede the text. I do not imply by this that all the details of the text are as it were pre-planned by the speaker; this would be a reification or an overburdening of the speaker's already too overburdened mind! I mean simply that the speaker must have some notion of what he is attempting to achieve, who his audience is and what strategy he is about to employ to achieve his end. It is a common mistake to imagine that the 'what' in question has to be of a practical, informational kind; this is by no means necessary. The saying of sweet nothings or even of non-sweet nothings is just as much directed to an achievement of something as the writing of a manual for the repair of a machine. Nor is there any implication of explicit awareness any more than there is of an awareness of meaning as distinct from verbal realization in normal, everyday speaking.

In contexts with dialogic mode, the possibility of genuine turn-taking exists; therefore, a cooperative negotiation of

context can occur. But not all contexts are equally amenable to this; as I suggested above only those contexts genuinely lend themselves to negotiation where the environment is interpretatively neutral. To state this more explicitly we have to introduce certain attributes by reference to which both field and tenor can be further sub-categorized. One such attribute is institutionalization. We may think of this as a continuum extending from most institutionalized to least institutionalized--or individuated. I believe that my use of these terms is in keeping with that of Bernstein (1971). Thus a process may be ranged anywhere on a cline from most institutionalized to most individuated. Social processes which are institutionalized would logically be multiply coded semiotically; that is to say, the fact that they are institutionalized would be indicated by the fact that the different modes of meaning would single them out, and the boundaries set for a process by one mode would be commensurate with those set by another mode of meaning. As example consider the social process of marrying or dispensation of justice. Both these processes are toward the institutionalized end of the continuum and accordingly both are multiply coded through ways of dressing, ways of conducting oneself, performance of a set of ritual actions, the presence of a set of recognized locations for the carrying out of these ritual actions and by a communally recognized set of the rights and obligations accruing to participants who enter the various stages of these processes in various capacities. These nonverbal codings become diagnostic of the nature of the process, and this has a serious consequence for the prediction of frames of relevance. The unfolding of insitutionalized processes involves convergent coding, with several modes of meaning operating visibly and at once so that there is a great deal of redundant information. And what, from the point of view of verbal coding, may be seen as just a material situational setting, can from the point of view of the social process be seen as situation semiotically coded through a series of distinct codes. Whenever there is evidence of convergent coding, we tend to interpret the context for verbal interaction by reference to it and our interpretation has a significant probability of being correct. This is true even when an institutionalized process is under strain, since the erosion of multiple convergent codes is of necessity slow; whatever the crisis for marriage as a social process may be, even today if we find a young woman in a wedding dress walking to the church the common inference is that a wedding is about to take place; and this common inference has a high probability of being correct. It is not outside the realm of possibility that she is on her way to, say, a fancy dress party but few people would infer this; and what is more such inference would have a considerably low probability of being correct. Equally, when we see some one enter a shop or a bank and walk up to the counter and engage in a verbal exchange, we infer this to be a service encounter and there is a very high probability of our being correct in this inference, although again it is not entirely impossible that the person is

at that moment engaged in threatening the assistant in a quiet, non-histrionic way. let me add in passing that the different participants of a social process do not have the same 'attitude' to the process: the priest does not feel the same way about this wedding as the bride and groom do, just as the golfer does not feel the same way about the game as the caddy does (Goffman: 1975); but in my view this does not mean that two distinct processes are going on side by side. We must see the tension of distinct views as inherent in the nature of that process; and these tensions contribute to the form of verbal interaction if and when it takes place. We can say then that when the material situational setting displays a series of convergent codes, then the probability of the individual negotiation of context is appreciably reduced.

This prediction can be made even more accurate if we consider the remaining factor: tenor of discourse. Recall that tenor is concerned with role relations. Roles can also be sub-categorized by reference to the institutionalized-individuated continuum. Institutionalized roles are normally hierarchic, while the individuated ones even if hierarchic permit greater discretion to the role holder. If the role is hierarchic this implies non-reversibility of functions: the two roles have distinct rights and obligations and the line is drawn sharply. The carriers of the two hierarchic roles cannot just assume any role except under a certain condition. This is provided by reduced social distance (Hasan: 1973; 1978; 1980). The social distance between the interactants is determined by reference to the range and frequency of their interaction. The wider the range and the more frequent their interaction with each other, the less the social distance between them. We get close to the personal attributes of the carriers of roles through this attribute. The greatest degree of role reversibility is possible where the role is individuated and the social distance between the interactants is minimum. Such a role might be friend or close colleague or close sibling (of possibly the same sex). Whatever one can do, the other can do too; their rights and obligations are balanced. The reduction of social distance and the reversibility of rights and obligations implies that a great deal of discretion is available to both interactants. The lowest degree of role reversibility is permitted where the roles are hierarchic and institutionalized while the social distance is at its maximum; an example would be an interviewer and an interviewee for a job.

We are now ready to make the final generalizations. In any situation of interaction in the dialogic mode, whatever other information is available to the interactants or not, this much they must know for this pertains to their personal history: what kind of social distance obtains between them, and therefore how far along the institutionalized end of the continuum they would be. If the material situational setting is convergently coded, and if the social distance is tending to the maximum, then we

have an environment which is hostile to individual negotiation of context. This is not to say that one cannot attempt it, but such attempts are viewed with suspicion or anger or explained away as a joke in bad taste. If I go to get a visa at a foreign Consulate and am called to an interview with the Assistant Consul, I really do not have the privilege of negotiating a context of casual chat with him; that dance is led by him. Of course I could always try leading, but if I did it would either say something about my intelligence, if you are uncharitable, or about my ideological stance, or cast doubt upon my real motive in applying for the visa. The environments in which cooperative negotiation of context is genuinely achieved most often, can be described as one where the material situational setting is not convergently coded as pertaining to some specific social process and where the social distance between the interactants is near minimum. For example upon meeting a close colleague in the Central Quad of my Campus, I can negotiate a context so that we may end up either going to the bar for a drink or we may settle down to a discussion of the latest manifestation of academic bureaucracy or whatever. Seeing us together in the Central Quad gives one no ground for predicting what our specific frame of relevance might be at that moment. It is however worth pointing out that even in such an open and potentially variable environment, the form of our interaction is still generally predictable (Ventola: 1979). When the context is cooperatively negotiated, the text and the context evolve approximately concurrently, each successive message functioning as an input to the interactants' definition of what is being achieved.

I hope that I have succeeded in showing how within a conception of contextual norms, both variation and individual autonomy can be systematically treated so that they become useful theoretical tools in the discussion of text creation and text interpretation. The nature of interaction is inherently social, no matter how personal the ends it is made to achieve.

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IDENTIFIABILITY AND FOCAL ATTENTION IN AN INTEGRATED VIEW OF DISCOURSE

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The terms Theme, Rheme, Topic and Focus are notorious for their variant usages by linguists; but our purpose here is not to survey that variety nor to attempt rectification of that state of affairs. A general criticism that can be made of prior usage is that Theme, Rheme, etc. have been only vaguely defined, or that they have been developed by means of equally unexplained terms (e.g. "given," "presupposition," etc.). Our intent here is to outline a usage of Theme, Rheme, Topic and Focus that is couched within an explicit framework for the understanding of discourse (cf. Copeland and Davis 1980 and Ms. and Davis and Copeland 1980).

Our belief is that successful explanation of discourse (and other language) phenomena has not been forthcoming, in part, because linguists have traditionally resisted inclusion of gnostology (or its equivalent in other models) as part of language. But it is becoming more and more apparent to all those investigating discourse--linguists, anthropologists and psychologists alike--that cognitive structures and processes are so intricately connected with (other) linguistic structures in the organization and transfer of information that they cannot be productively considered separately. The lexological and morphological realizations of discourse context features (for example, word order, article selection, case selection, etc.) seriously call into question the distinction between gnostology on the one hand and the "rest" of language on the other, and strongly suggest that gnostology constitutes a cognitive system which includes language and that this system cannot by reductionism be successfully fragmented.

In elaborating a gnostology suitable to the demands of discourse analysis, we have adopted a notion of the type illustrated in figure 1 (cf. Davis and Copeland 1980 and Copeland and Davis 1980). Within the term "gnostology" we intend whatever might be attributed by cognitive psychologists to semantic (or long-term) memory and also to episodic memory.¹ To reflect the

presence of an item in the semantic memory or episodic memory we distinguish, respectively, between Domains (or generic classes)--a type illustrated in figure 1-- and Particulars.

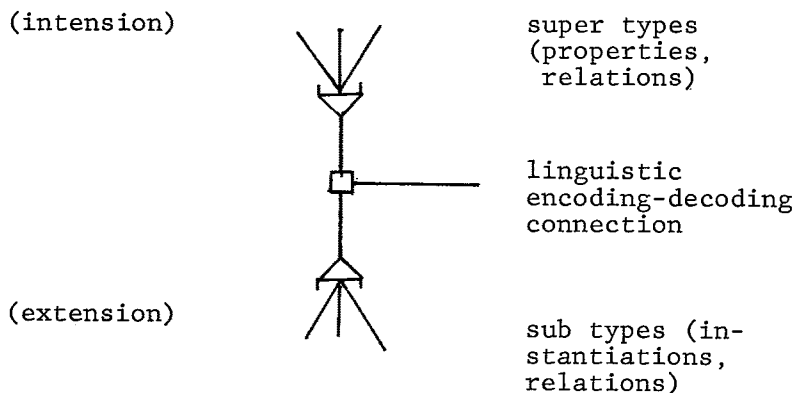


Figure 1

which are tokens of our experiences.. (Additional motivation for this distinction is presented in Copeland and Davis Ms.) Formally, we have begun to distinguish the Particular by the notation in figure 2 (cf. Copeland and Davis 1980).

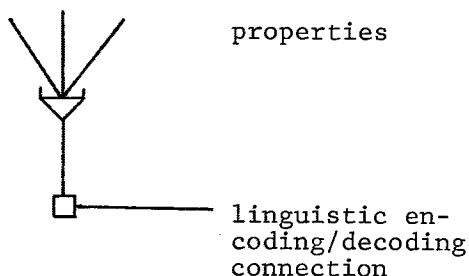


Figure 2

A Particular is always related to a domain of which it is a unique instance. For example, given sentences (1) and (2),

(1) pietsch ist ein katze
'pietsch is a cat'

(2) plumi ist áuch eine (plumi auch)
'plumi is one, too'

figure 3 illustrates the Domain-Particular division. Prior to the exchange of (1) and (2) in a conversation, the two Particulars are absent from the addressee's gnostology (a fragment of which is) represented in figure 3. Also absent prior to the utterance of (1) and (2) are the connecting lines that converge to define the Particular nections (broken lines in figure 3). Thus, a very basic distinction is to be made between what is in the system (gnostology or semantic and episodic memory) and what is not.

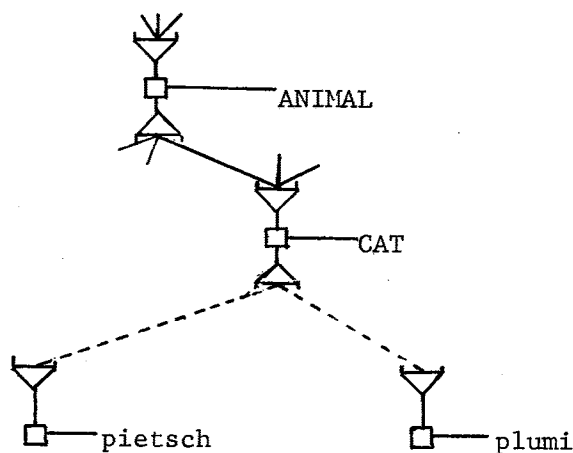


Figure 3

1. Varieties of Presence-in-the-System. We shall use the term Identifiable to label any Domain or Particular present in the system. Two fundamental observations give rise to further distinctions. First, it has long been claimed that discourse is based upon shared knowledge and that the purpose of communication is to increase the amount of sharedness between systems. The second observation is that the individuals' experience and their acquired knowledge is largely via tokens--

our Particulars.² Since for any Domain there will typically exist many Particulars, the successful accomplishment of discourse--the correct alignment of gnostologies--will require some conventions to enable the Speaker to instruct the Listener which of the Particulars he, the Speaker, intends. In doing so, the Speaker necessarily assesses the Listener's ability to recognize the terms of his message.

This assessment of the Listener's capacity employs a set of assumptions (cf. Davis and Copeland 1980 for details): first, that the activation of (or addition to) the gnostology is the function of consciousness. Second, mention of a term in discourse will cause a nection to become conscious within the Listener's gnostology. And third, consciousness is temporally constrained as it is bound by the number of terms that may be simultaneously in that state. Any term that is conscious is Given (Gv); and Gv is then a combination of factors (cf. Table 1). The Speaker's assumption that the gnostological state of a nection is Gv is typically signaled by the use of pronouns (indices) or in some languages by elision. If the term is assumed by the Speaker to be not Gv--specifically here, that the Domain is in the Listener's gnostology but not his consciousness--then the Speaker signals that assumption (typically) by mention of the appropriate Name. Thus, (1) above, being the first sentence in a discourse, is cast in terms of Names (e.g. cat), not Indices (e.g. one).

Within the citation of Names, there are further distinctions to be made. If the Speaker assumes that the Particular term cited/mentioned is, in addition to being outside the Listener's consciousness, also outside his gnostology, he will in German, for example, signal this--typically by use of indefinite articles, e.g. eine in (1). Eine katze is then, in this instance, an instruction for the Listener to construct a Particular nection and also (necessarily) to make conscious the Domain of which it is a Particular. This second instruction, to make the Domain conscious, is necessary in order to distinguish the discourse state of New (Nw), as just described for eine katze, from one in which the Domain is already conscious. Sentence (2) illustrates this with (auch) eine. Here, since the Domain CAT is already conscious (assumed so by the Speaker of 2), the Speaker instructs his Listener to construct a Particular, not by the use of a Name, but by one of a subset of Indices, viz. eine. This discourse state, wherein the Domain is conscious, but some Particular is assumed by the Speaker to be

absent from the Listener's gnostology, is to be distinguished from Gv and Nw; and we have labeled it Some (Sm). In sentence (3),

- (3) angeklagter: die frau hat mir eine ohrfeige
gegeben, darauf habe ich ihr
auch eine geklebt

defendant: the lady gave me a slap in the
face, and I just gave her one
back

eine ohrfeige indicates a Nw term, while (auch) eine
(geklebt) signals a Sm.

Once mention of a term of discourse adds it to the listener's gnostology, further mention may promote its retention in the conscious state; but if the conversation moves to other matters, the Particular may become non-conscious while nevertheless remaining in the episodic memory of that exchange. Should talk return to that item, the use of a Name is appropriate, but a distinction may be made to indicate that the Speaker is signaling that the Particular is in the Listener's gnostology, but not conscious. Here, the Speaker is instructing the Listener to make a Particular nection conscious, but not to construct it. Terms in this state have been called Recoverable (Rc) (cf. Copeland and Davis Ms. and Davis and Copeland 1980). In German, for example, the definite article is typically employed to mark this context.

In some instances a Particular may be mentioned by Name and also by some variety of definite article, yet not be assumed by the Speaker to exist in the Listener's episodic memory of the discourse. For example,

- (4) der punkt fehlt am ende
'the period is missing at the end'
- (5) der briefträger hat den mann erschossen
'the mailman shot the man'

The first phrase in both (i.e. der punkt and der briefträger), when it is the first time they're mentioned, must necessarily be new to the conversation, yet the Speaker assumes that the proper Particulars are already present in the Listener's gnostology. For example, given printed sentences, everyone knows that they are completed by some form of punctuation. Given den mann (which in the context of 5 would be Rc),

everyone knows that each person (his dwelling) typically has a mailman. In (5) and (6) the Speaker relies on his Listener's life experience--more narrowly he instructs his Listener to activate/make conscious a portion of his gnostology, assumed by the Speaker to be already present. Such terms will be called Computable (Cm).³

A last distinction necessary for our discussion turns on a statement above concerning simple presence or absence in the gnostological systems. In (6),

- (6) ich habe gerade einen schlorf gesehen
'I just saw a schlorf'

the Listener is instructed to construct a Particular; but there is no Domain of which the Particular schlorf can be an instance. Both the Domain and the Particular are unidentifiable. These terms will be called Novel (Nv).

In Table 1 we summarize these distinctions. The summary shows the semological distinctions (Nv, Nw, Cm, Rc, Rm, Gv) and their corresponding gnostological state specifications for Domain and Particular. It should be clear from even this cursory summation that what is or is not in the gnostology (semantic or episodic memory) is sensitive to one's immediate experience (linguistic and extra-linguistic); that is, the basis for the Speaker to assess what the Listener's gnostology may be--and hence, as well, the devices of discourse--are dependent on what has gone before.⁴

2. Theme and Rheme. An utterance is understood only if it has some relation to the Listener's gnostology at the time of utterance, and that relation is by virtue of terms in the Listener's gnostology being identical to (or identified as) some of those in the utterance. At this point Halliday's perception of the Theme as the "peg on which the message is hung" (1970:161) has some precise meaning, viz. those terms of the utterance (Particulars and/or Domains) that are present in the Listener's gnostology (such state being signaled by the Speaker to the Listener); and they are constructed and thereby added to the Listener's system, sense being made of them via their connections with the Theme. The constructed and added portion constitutes the Rheme, and both Theme and Rheme now have explicit meanings. (Additional varieties of Theme-Rheme are provided in Copeland and Davis 1980).

It is also clear how an utterance can be binarily and exclusively segmented into Theme and Rheme,

NON-IDENTIFIABLE		IDENTIFIABLE				
	Novel (Nv)	New (Nw)	Computable (Cm)	Recoverable (Rc)	Some (Sm)	Given (Gv)
DOMAIN	Non-Ident (Non-Consc)	Ident Non-Consc	Ident (SM) * Non-Consc	Ident (EM) * Non-Consc	(Ident) Consc	(Ident) Consc
PARTICULAR	Non-Ident (Non-Consc)	Non-Ident (Non-Consc)	Ident (SM) Non-Consc	Ident (EM) Non-Consc	Non-Ident (Non-Consc)	(Ident) Consc

* (SM) abbreviates Semantic Memory and (EM) Episodic Memory

Table 1. Types of Identifiability

but this semantic binariness does not imply a syntactic (lexological), linear, binary segmentation. For example, in (7),

- (7) er hat es getan
'he did it'

the presence of Indices signals that all the terms of the utterance are Gv and hence assumed and signaled by the Speaker to be present in the Listener's gnostology; and thus (by definitions of the previous paragraphs) they constitute the Theme of the utterance. Yet cooperative utterances are informative (Grice 1975), and, indeed, (7) is; but the added portion of the gnostology for the Listener is the lines to connect er, es and hat getan. There is, obviously, no necessary, linear correlate to Theme-Rheme, although equally obviously there can be:

- (8) er hat ein buch geklaut
TH RH

'he swiped a book'

It should also be pointed out that although Theme often involves Gv, it is clear that Theme cannot be defined as the Gv (nor exclusively identified as the Gv) of an utterance; and imprecise statements here have hindered progress in understanding these phenomena.

The signaling of Theme-Rheme does not place great formal demand on language for its expression, and much of syntax is devoted to encoding other types of information, which are equally discourse based. The information of utterances consists as well of some propositional structure consisting of Event and Role(s)--these being the "terms" and "items" of which the preceding discussion has been cast. Frequently, the Event portion of an utterance is manifested simultaneously with the Rheme; and the Event is frequently a syntactic verb. Yet some languages permit nouns to function as Event-Rhemes (thus blurring the verb-noun distinction as in northwest coast languages); or they permit (pseudo) clefting constructions (cf., for example, Keenan and Hull 1973).

3. Topic and Focus. Within the "nouny" Role-Themes, language frequently permits selection of at least one manifestation of Role-Theme as the "prominent" one. The difficulty is in determining what "prominent" means and this difficulty arises from the way different lan-

guages implement it. German, for example uses the Vorfeld, the blank in the formula_VSOV, to mark "prominence"; and such "prominence" is usually congruent with or is a subset of Theme, but this is not always the case. Nor is there any a priori reason that it should be. Consider (9),

- (9) ein h^und ist es gewesen
'a dog is what it was'

wherein ein h^und is a Contrastive Rheme, contrastive in that this is the correct identification from among possible candidates (Chafe 1976).⁵

Prominence is a characteristic of the term in the utterance on which the Listener is asked to place his focal attention, and Topic will be used to designate this property.⁶ The Topic need not always be a Role from within the propositional structure. German, for example, permits temporals and locatives to so appear:

- (10) gestern habe ich nicht gesehen
TP
'yesterday I didn't see him'

- (11) in deutschland gibt es wenig inflation
TP
'in Germany there is little inflation'

In those languages like German that have passive constructions, the first term in each is the Topic of the utterance, the item selected for focal attention.

The notion of focal attention derives from psychologically based observations and has found earlier psycholinguistic reflection in ease of sentence recall (Prentice 1967, Tannenbaum and Williams 1968 and Turner and Rommetveit 1968). Focal attention is an independently suggested psychological construct, derived from empirical study, that is found to function within language as well.⁷ Topic now acquires a more precise meaning. It is the portion of the Theme-Rheme selected for focal attention; it is the primary means by which the Rheme is relevant.

Topic can be relatively constrained by individual languages, as in the popularly discussed Tagalog (Schachter 1976) and Lisu (Hope 1974 and Li and Thompson 1976). In these and other languages, some term that functions as Theme will also receive focal attention, and that term must be "definite" (i.e. apparently equivalent to our Rc or Gv, but not

A language type--which would be the complement of the Tagalog-Lisu type--may exist in which Topic-focal attention is consistently combined with Rheme. We have in mind here the marking of Rheme in Bantu languages (Givón 1975) and the use of suprasegmentals in English. A language like Lisu--in which Topic-focal attention co-occurs in some term that is also Theme and which term appears utterance initial--may not be that different from a language like Bella Coola (Davis and Saunders 1978) that appears to combine Topic-focal attention consistently with Rheme in one element and also to place that element in utterance initial position. The two are similar in the location of Topic, but differ in what element of utterance they combine it with: Theme in the first language and Rheme in the second. (There are implications of this view that space forces us to omit from this discussion, e.g. reinterpretation of a potential Topic-Comment opposition as Topic-Nontopic.)

(12) (a) Theme-Rheme
(b) Topic (focal attention within Theme-Rheme)
(c) Event-Role(s)

or (12a), (12b) and (12c) in some combination. Yet this does not yet exhaust the gnostological data to be transmitted.

The idea of Focus has been frequently discussed (sometimes under different labels, e.g. "empathy" [Kuno 1976] or "perspective" [Fillmore 1977]).⁸ Focus is distinct from the individual gnostological factors of (12), but is internal to (12c), namely the propositional Event-Role content of an utterance: "internal" in that one of the Roles is selected for carrying Focus. The formal marking in English and German--which language allow the separation of Topic and Focus--is by grammatical agreement, i.e. the grammatical subject. Thus, (13),

- (13) gestern wurde ich von einer biene gestochen
 TP FC AG
 PAT
 'yesterday I was stung by a bee'

differs from (14),

- (14) gestern hat mich eine biene gestochen
 TP PAT FC, AG
 'yesterday a bee stung me'

in that the propositional content (but not the Theme-Rheme content) is viewed from different perspectives.

If we now add Focus to (12) and note that Focus behaves with respect to propositional structure (12c) as Topic behaves with respect to the Theme-Rheme structure of (12a), then it is possible to see Topic and Focus as similar (cf. figure 5), thus explaining why the "favorite sentence-forms" (Bloomfield 1933:

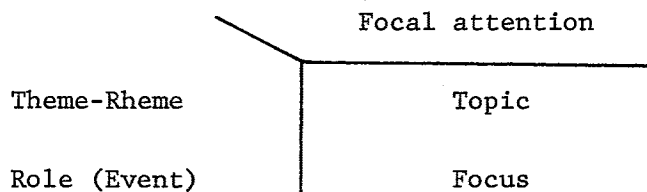


Figure 5

171-172) of some languages do not provide distinct signaling devices for Topic and Focus; for example, in the favored SVO(V) clause type of German, initial position signals Topic, and it is simultaneously the unmarked position of Focus (i.e. the grammatical subject.) It is also this conflation that Schachter (1977) sees as providing the substance of "subject".

What we have attempted here is an extension of our previous work on discourse to account for a larger set of data; in doing this we have expanded upon the appearance of the gnostology (described in Davis and Copeland 1980 and Copeland and Davis 1980) to show how Theme-Rheme notions fit naturally into the system and how the previously and independently motivated construct of focal attention may be identified with the language data of Topic and Focus, each referring, respectively, to Theme-Rheme structure and Event-Role propositional structure. Such elaboration seems to us preferable to alternative models with which it might compete.⁹

Footnotes

¹The adaption of these distinctions to function in the ordering of language data is discussed in Davis and Copeland 1980. Detailed discussion of memory can be found in Baddeley 1976.

²We set aside here instances of formal instruction wherein learning may occur in terms of generic Domains rather than in terms of Particulars.

³This term is adapted from Clark and Haviland 1977 and is used in a slightly different sense here.

⁴Dahl (1976), Hawkins (1978) and Prince (1979)--among others--have dealt with the distinctions discussed here, but they have not provided a way of incorporating them with other observations about language.

⁵Notice that the utterance of a Name, e.g. Hund in (9), can be simultaneously partially Theme and partially Rheme. It is Theme by virtue of the Identifiability of the Domain, and it is Rheme by virtue of the absence of the Particular. Cp. figure 4a.

⁶What we intend here by Topic would include what others have called "foregrounding" (Keenan and

Schieffelin 1976); labeled by one of its formal properties as "left dislocation" (Ross 1968: 232); or called "focus of attention" (Duranti and Ochs 1979: 407).

⁷Some cognitive psychologists (Lachman, Lachman and Butterfield 1979: 185-209) now maintain a distinction between attention (parallel processing with no fixed limits) and consciousness (serial processing with fixed limits). We hypothesize (Davis and Copeland 1980) that the psychological phenomenon of consciousness is emically employed in conversation (e.g. via maintenance) in a way that may permit etic, temporal limits upon it to be exceeded; "focal attention"--Tannenbaum and Williams (1968) call it "conceptual focus"--is used here to designate the abrupt, pointillistically active property of consciousness. See also Duranti and Ochs 1979 (esp. page 413). They do not, however, clearly distinguish Topic from Focus.

⁸"Focus" has been used by others (Chomsky 1970 and Givón 1975) in a different way to label what we would call (partially) Rheme within the system developed here.

⁹Cf., for example, Foley and Van Valin 1977.

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SLIPS OF THE TONGUE AND METATHESIS IN A NONSEGMENTAL MODEL

T.D. Griffen

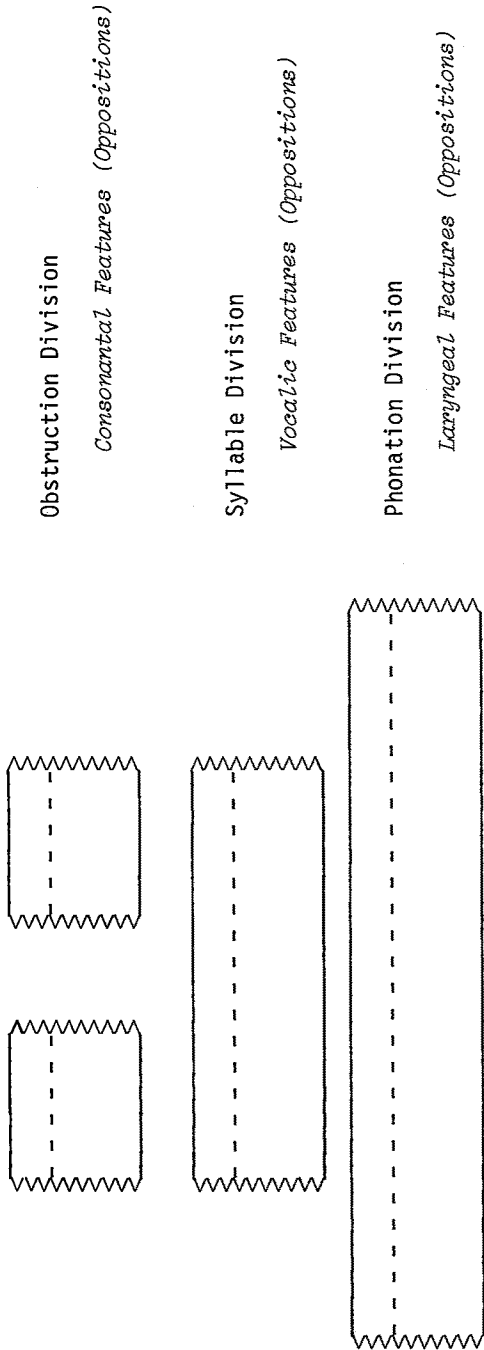
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At several previous Fora of the Linguistic Association of Canada and the United States, I have presented aspects of a nonsegmental model of phonology. Rather than bundling features into discrete phonemes in segmental sequence, this model recognizes that speech is a system of dynamic constraint. By way of analogy, we can consider segmentation as seen from the viewpoint of the spectrogram. In segmental phonology, the analyst makes what amounts to cross-sectional cuts down the spectrogram, bundling those characteristics caught up in these vertical strips more or less into discrete segments.

In this nonsegmental model, on the other hand, we examine the characteristics on the spectrogram according to their type, so that consonantal characteristics are attributed only to consonants, vocalic characteristics only to vowels, etc. As I demonstrated three years ago (Griffen 1978), this nonsegmental mode of analysis eliminates the supposed need for allophonic relationships, for all such allophones are simply the product of cross-sectional segmentation—in effect, they are clumsy attempts to undo the damage of segmental analysis.

When we separate the features by type, we end up with three general divisions: a phonation division with the laryngeal characteristics, a syllable division with the vocalic characteristics, and an obstruction division with the consonantal obstruction characteristics. These three divisions are in a relationship of constraint, in keeping with the evidence of dynamic phonetics. The phonation division is constrained by the syllable division, as the phonated airstream is constrained by the configuration of the vocalic apparatus, creating particular resonance chambers; and these two divisions are constrained by the obstruction division, as this phonated and syllabicated airstream is affected by particular degrees of hindrance. Each of these divisions is further constrained by its own set of prosodies, features within the same divisional type constraining the realization of the main division feature. For example, the phonation pattern prosody is roughly the same as intonation, the syllable prosodies include stress, pitch, nasality, etc., and the obstruction prosodies include aspiration, voice, nasality, etc.

For an organizational unit, this model makes use of the syllabic frame, as in the accompanying diagram. While it is certainly not the purpose of this frame to be used simply to provide a syllabic inventory, as this would obviate the significant generalizations to be made by feature analysis (and the feature in functional opposition is indeed the basic element of this model), this



syllabic frame does provide a highly flexible means of describing the relationships of constraint between the various features and feature types.

One question that often recurs at these Fora concerns how this model might describe slips of the tongue. After all, the traditional way of analyzing slips of the tongue and their institutionalization in metathesis has been through the switching around of discrete segments. Without the segment, the traditional phonologist should indeed wonder just how I propose to account for this phenomenon. As I shall demonstrate, however, such slips are better described as occurring nonsegmentally.

In segmental phonology, speech segments are seen to involve bundles of features inherent to them. The distinctive features making up the phoneme are given in the lexicon, and the other features through which the phoneme is realized as an allophone are supplied through transformational rules or allophonic distribution requirements based upon the requisites of the structural environment. In the case of slips of the tongue, however, we are changing one structural environment for another, and therein lies the problem for a segmental accounting of this phenomenon.

Perhaps the most adequate segmental mode of description for slips of the tongue and metathesis can be found in the so-called natural phonology, which of all the generative approaches best recognizes the role of physiological phonetics. To be sure, as Bjarkman (1977) rather pointedly demonstrates, this natural phonology is in reality little different from the traditional generative model with the addition of a phonemic level, as practised, for example, by Schane (1973). That the natural processes of Stampe (1973) do overlap considerably with the traditional rules of allophonic distribution, though, should only serve to show that the problems with the segmental description are widespread.

To use one of Stampe's own examples, let us consider the slip of the tongue in which the phrase which would normally be realized as *scotch tape* [skatʃ tʰeip] is through performance error realized as *totch scape* [tʰatʃ sk'eip] or as *cotch stape* [kʰatʃ steip]. I should first like to examine the realization of palatality and then to examine that of aspiration.

As Stampe quite correctly points out, the [k] segment in the normal form is not palatal, but in the first slip version it is palatal. While traditional structural transformational phonemics would require a rule in which the nonpalatal [k] is transformed into a palatal [k'] through the rewriting of the feature [palatal] from minus to plus, natural phonology recognizes that the palatality of this [k'] is the result of a natural process palatalizing dorsal consonants occurring before front vowels. In either case, whether we call it an allophonic rule or distribution requirement or we call it a natural process, there is a transformation, if only to change the unmarked form to the marked.

In the nonsegmental model, however, this aspect of the slip is handled much more simply and, what is of far greater importance, much more directly. The palatality of the [k'] in the slip is analogous with the situation in regard to German [x], described in

Griffen 1977. Where the pertinent mark of the obstruction is dorsality, then the precise point of constraint on the airstream is purely a matter of the position of the tongue-body in the production of the vowel constrained by this dorsal obstruction. The palatality is a mark of the front vowel, and insofar as the obstruction is concerned, it is a coarticulated characteristic of the environment that is not at all pertinent to the position of obstruction—the obstruction is dorsal, whether realized in the normal version or in the slip version.

One of the most basic advantages of this system is that within the syllabic frame, characteristics of the consonantal obstructions are attributed to the obstructions and characteristics of the syllabic vowels are attributed to the vowels, for vocalic characteristics are not mistakenly lumped in with the obstructions through cross-sectional segmentation. Thus, as the palatality has nothing whatever to do with the dorsal obstruction, it need not be entered into the obstruction position of the syllabic frame. It simply exists in the coarticulated vocalic environment by virtue of being a vocalic characteristic.

In this slip of the tongue, then, it is the obstruction feature of dorsality (along with the constraining prosody of voicelessness) that is moved, and it simply happens to be placed into a palatal environment. I should contend that such a description is far more natural than the segmental processes involving formal justification within the inherent feature specifications of a segment for an element of the environment which itself has nothing to do with the segment and has not changed at all, anyway. Moreover, I should contend that it is the movement of the feature or group of features that is involved in reality and nothing more.

Turning our attention now to the aspiration of Stampe's example, a natural phonologist would point out that it is a natural process of English that causes an initial stop to be aspirated and a stop following the sibilant to be unaspirated. Nonetheless, this requires the segment to change its marking from [+aspirated] to [-aspirated] or vice versa, or at least it requires some formal statement of marking for this segment.

As I point out in regard to the same situation in Welsh (see Griffen 1976), however, the 'deaspiration after [s]' phenomenon is also a needless product of segmental analysis. The initial position of the word is indeed a position in which the obstruction prosody of aspiration occurs. Thus, it becomes a characteristic of the environment in precisely the same way that the palatality is a characteristic of the environment noted above. As it is, the aspiration does indeed occur in the initial position of the slip version as a constraint on the sibilant obstruction, and it occurs to such a degree that any aspiration that might occur in constraint of the following obstruction is neutralized (or, alternatively, its range is altered).

In this slip of the tongue, then, all that has changed is the position of the sibilant obstruction. The aspiration remains where it is as a characteristic obstruction prosody in that environment—it has not moved, nor has it vanished, nor has it materialized. If

by a slip of the tongue we are to mean that something is switched around in the syllable or between syllables, then I would certainly maintain that the nonsegmental model does a far superior job of describing this phenomenon as a slip of the tongue, without the extraneous slop of potentially complex natural processes, allophonic rules, or other such formal devices that can only serve to complicate matters where they are not at all complicated in the dynamic phonetic facts.

To see just how complicated a segmental analysis of such phenomena can be, let us consider the famous metathesis from Germanic form *hros* [rhos] to Modern English *horse* [hors]. A traditional segmental analysis of this would maintain that the trill segment and the vowel have changed positions. On the surface of the description, it appears to be simple enough. Indeed, it appears to be much simpler than a segmentalist would suppose the nonsegmental analysis to be, for here a consonantal obstruction is actually switching places with a syllabic vowel—the constraining element is being metathesized with the element it is constraining. (As I demonstrate below, however, such an interpretation would be highly mistaken.)

A closer examination of this metathesis, however, reveals that the rather simple segmental explanation entails not a description of the actual phonetics of the situation, but a description of the spelling. The notion that the letter *r* is free to leave its position next to the letter *h*, as the letter *s* left its position next to the letter *e* in the previous example, conveniently ignores the fact that in the phonetics of the situation this *h* represents aspiration and voicelessness that a segmental phonologist should be bundling up with the trill into one discrete segment. As deSaussure would put it, we have committed the fundamental error in allowing ourselves to analyze the spelling as if it were the sound (1959:30).

In phonetic reality, the segmentalist's task in accounting for the metathesis involved in the change from *hros* to *horse* is indeed an unenviable one. Somehow, the segmentalist must justify breaking up a segment that is [+trill, +aspirated, -voiced] into one segment that is [+trill, -aspirated, +voiced] and one segment that is [-trill, +aspirated, -voiced]. If this task can be accomplished without doing irreparable harm to the naturalness of phonology and the generality of rules or distribution statements, the former segment can then be metathesized with the vowel. That such a thing can be accomplished in a segmental model without its becoming a nonsegmental model, however, remains to be seen.

In a nonsegmental model, on the other hand, this metathesis is handled directly and simply. The aspiration in initial position is a constraint that happens to be coarticulated with the trill. If the trill is moved, there is no need for the aspiration to be somehow cut out or away from it—it simply remains where it is. As for the notion of a consonantal obstruction being metathesized with a vowel, this is only a segmental idea. In the nonsegmental model, the change is only in the position of the trill, from syllable-initial position to syllable-final position. As for the opposition of voice that is coarticulated with the trill, in *hros* the voicelessness is a product of the aspiration, and in *horse* it is a product

of the voicing of the syllabic vowel. Thus, this feature is simply an element of the environment and does not affect the trill at all.

In this metathesis, then, nothing has changed except the position of the trill. In the description within this model, there has been no change of feature characteristics whatsoever, no additions of any elements, and no deletions of any elements. If by metathesis we are to mean a simple change of position, then surely this model handles the phenomenon imprecisely the manner we intend, by moving the trill obstruction nonsegmentally from its coarticulation with the aspirate element to its coarticulation with the privation of aspiration and with the presence of plain voicing in the vowel. As for the segmental approach, the requirements for separating features from one bundle into two, rewriting feature specifications, and then moving what in effect is a created segment away from its mirror-image clone are requirements that should indeed be very difficult to motivate, at least without making the phonology so powerful as to be unmanageable.

While this metathesis may be extremely complex and difficult to motivate segmentally, there are to be found metatheses and slips of the tongue that simply cannot be motivated from a segmental point of view. Perhaps the clearest example of this can be found in a slip of the tongue that almost became institutionalized in metathesis in nineteenth-century Welsh. The word *ateb* [ateb] 'answer' widely came to be mispronounced and even misspelled as *aped* [aped]. A segmental analyst would indeed have a difficult time accounting for this slip, for the [t] changes places with a [b], and thereby it becomes a [d] as the [b] becomes a [p]. To be sure, word-final position in Welsh is a position of neutralization for aspiration, so the [t] could only be realized as [d] in this position.

The problem facing the segmental analyst, then, is how to account for the change from [b] to [p]. By natural processes to be found in Welsh, such a change ought not to occur, for the phonology is based upon the fortis-lenis scale, and intervocalic position in Welsh normally provides pressure for the opposite type of change, known as lenition (see Jackson 1953, Griffen 1975). Those who recall my presentation at the sixth Forum of this association (Griffen 1980), however, might remember that *ateb* has undergone provection in the environment in question due to aspiration involved in the combination of *ad* [a:d] 'again' and *heb* [he:b] 'say (archaic)'. Thus, one could argue that at an abstract level this aspiration is still there in the word *heb*, causing a similar provection from the [b] to the [p]. Such an argument, though, would work only for Middle Welsh, in which the word was *heb*. In Modern Welsh, it is *eb* [e:b], without the [h]. Therefore, this tactic could only be used as a faulty rationalization based on etymological information not even reconstructable by the nineteenth-century speaker. In Modern Welsh, on the other hand, whether we base the analysis upon the concrete realization or upon some abstract form, we simply cannot motivate this slip of the tongue in a segmental description.

In the nonsegmental description, however, this slip of the tongue poses no problem at all. As it is the feature characteristic that is changed and not some sort of cross-sectional segment, we

simply switch around the dental and labial obstructions and leave the presence or absence of the obstruction prosody of aspiration where it is. This is a slip of the tongue in its simplest form.

Thus, the question is not: How can we handle slips of the tongue and metathesis in a model without the traditional cross-sectional segment? Rather, the question is: How can anyone maintain the traditional cross-sectional segment in the light of the evidence provided by slips of the tongue and metathesis? While the segmental models handle these phenomena with clumsy machinery and questionable or nonexistent motivation, the nonsegmental model handles them simply, directly, and true to the tenets of structural/functional theory and to the significant contributions made by feature analysis.

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TOWARDS A RELATIONAL NETWORK MODEL OF SENTENCE RECOGNITION

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The work we are reporting in this paper (which is supported by a grant from the Science Research Council, UK) is concerned with modelling certain aspects of the decoding process. The word 'recognition' in the title was chosen in preference to 'comprehension' by way of alluding to the fact that at this stage we are not attempting to handle semantics, preferring instead to concentrate on the more manageable areas of phonology and surface syntax. What we are particularly interested in investigating is the way in which gaps in defective phonetic inputs are filled in on the basis of (a) predictions of the phonotactics, (b) predictions of the syntax, and (c) knowledge of the set of items in the vocabulary.

The 'relational networks' that we operate with are of the kind familiar from stratificational grammar and we would like to record our gratitude at this point to Peter Reich for sending us a copy of his Relational Network Simulator program at the outset of our work. The programming we have done so far has consisted in making additions to this program, first of all so that it would accept input signals that are partially sequential and partially simultaneous (strings of bundles of phonetic components) and secondly to get it to process defective inputs. The essence of our approach to the second problem is that numerical signals are sent along the lines of the network representing the reliability of particular constituents that may be part of the input. The choice between alternative candidates is then made on the basis of a comparison of their reliabilities. Although we have had successful runs on the computer with two-stratum grammars (containing a phonotactics and combined lexotactics/morphotactics) using complete phonetic representations as input, the mechanism for handling defective inputs is not yet fully operational. Thus we are unable at this stage to discuss specific results of the computational work. The paper is therefore devoted to a discussion of a number of general features of the model and the kind of behavioural facts that they are intended to give recognition to.

General features of the model

Four general features of the model are discussed: processing on all levels simultaneously; top-down processing as well as bottom-up; numerical signals; and multiple outputs.

1. Processing on all levels simultaneously

Listeners build up a semantic representation of a sentence as they proceed through it, rather than processing the whole sentence first phonologically, then syntactically, then semantically. This is clear, for instance, from the fact that when a sentence is interrupted, the listener has already derived a semantic representation for the part that he has heard. In our model, as soon as one is a short way into an utterance, processing is going on on all the levels. Processing at the higher of two adjacent strata is slightly out of phase with that at the lower of the two. Nevertheless, this phase difference is never more than one unit of the higher level, e.g. one morpheme if the lower level were the phonemic and the higher level the morphemic. Thus the various strata are not working completely independently of each other. As regards the two-stratum grammars that we have been running on the computer, utterances are parsed on the two levels simultaneously in this sense. Since it has always been a feature of stratificational grammar to reflect the fact that utterances are processed on all levels simultaneously, nothing further needs to be said under this heading.

2. Top-down processing as well as bottom-up

Using a stratificational grammar to model the decoding process entails sending signals into the network at the bottom of the realizational structure corresponding to specific components of phonetic representations. As the signals work their way upwards, larger and larger constituents are recognized. Such processing can be referred to as 'bottom-up' processing. As regards human listeners, there is a lot of evidence that the decoding of speech involves more than just bottom-up processing in this sense. There is, in addition, the active contribution of higher levels of the grammar, which we will refer to as 'top-down' processing. We will mention four kinds of evidence in support of the need for incorporating top-down processing into the model as well as bottom-up processing.

(a) Intelligibility of excerpts from fluent speech

If a passage of continuous speech is understood perfectly, one might suppose that each individual word in the passage is correctly identified on the basis of the phonetic evidence. Yet when individual words from such a passage are presented in isolation, the percentage of them that are correctly identified is often surprisingly low (Pollack and Pickett, 1964).

(b) Relationship between well-formedness and intelligibility

For a given signal-to-noise ratio, the intelligibility of speech varies in relation to the degree of well-formedness. Fully well-formed utterances are recognized better than utterances which are syntactically well-formed but semantically anomalous, and these in turn are recognized better than mere strings of

words with neither semantic nor syntactic structure (Miller and Isard, 1963).

(c) Well-formedness of misperceptions

When a listener misperceives speech, what he thinks he has heard is usually well-formed syntactically and semantically, e.g. 'Tadeja might come with you' was once misheard as 'Today I might come with you' but 'Tadeja went home yesterday' is less likely to be misperceived as '*Today I went home yesterday' (Garnes and Bond, 1975; Waterson, 1971).

(d) Phonemic restoration effect

When a phoneme-sized section of speech is removed from a recording and replaced by some other sound such as a cough, subjects are not aware that any of the speech has been removed, and assume instead that they have heard everything. Furthermore, when asked to say at what point in the utterance the cough occurred, they are unable to do so accurately (Warren and Obusek, 1971).

In each of the four cases the identification of some constituent of an utterance depends crucially on the fact that it is predictable. The importance of top-down processing is obviously inversely proportional to the quality of the speech: the less confident a listener is--whether consciously or unconsciously--of what he has heard, the more he has to rely on prediction. In theory, one might suppose that when the incoming signal is loud and clear from beginning to end, there would be no need for any top-down processing. In this case, the contribution of tactic patterns might seem to be merely to verify that the utterance is well-formed on the various levels, rather than that of inserting things which are predictable. In practice, however, the various tactic patterns and higher levels of the realizational structure will always make a more positive contribution. For instance, no matter how carefully speech is articulated, if it is to sound natural it will always contain unstressed syllables as well as stressed, and many distinctions that are made in stressed syllables are neutralized in unstressed syllables. In such cases top-down processing can often choose between the alternative interpretations. The same is true in cases of homonymy in stressed syllables.

3. Numerical signals

In Peter Reich's early computational work on a relational network model of language behaviour (1970) he found it convenient to use three distinct types of signals: anticipatory signals, negative feedback signals and regular production signals, but each type was merely either present or absent on a given line of the network at a given time. Later, in their model of slips of the tongue, Dell and Reich (1977) introduced numerical signals. Signalling in their model is such that at a particular moment there may be more than one element of the network competing to be signalled, e.g.

there might be two competing consonants both receiving a certain level of activation. In such a case the one with the higher level of activation is allowed to be produced rather than the one with the lower level. As regards a model of decoding, there is again a fair amount of evidence in support of using numerical signals. We will mention three such pieces of evidence.

(a) The Miller and Nicely perceptual confusions

Miller and Nicely (1955) established experimentally that, for instance, the voicing distinction in consonants is more resistant to masking by white noise than the distinction between different places of articulation. Thus for a certain range of signal-to-noise ratios the syllables bet, debt and get would be confused but the distinction between bet and pet would still be audible. We can give recognition to this fact in a model of the decoding process by feeding numerical signals into the lines at the bottom of the realizational structure, to represent the reliability of the various components of our phonetic representations, and in general associating higher values with the component 'voiced' than with 'labial', 'apical' and 'dorsal'. To represent a lower signal-to-noise ratio, we can scale down all the values in a particular phonetic representation. At the point at which the components 'labial', 'apical' and 'dorsal' are all inaudible, bet, debt and get each begin with a sound which involves simply 'closure' and and 'voicing' and they are thus homophonous. The relevant facts of this example can be further clarified by reference to Figure 1.

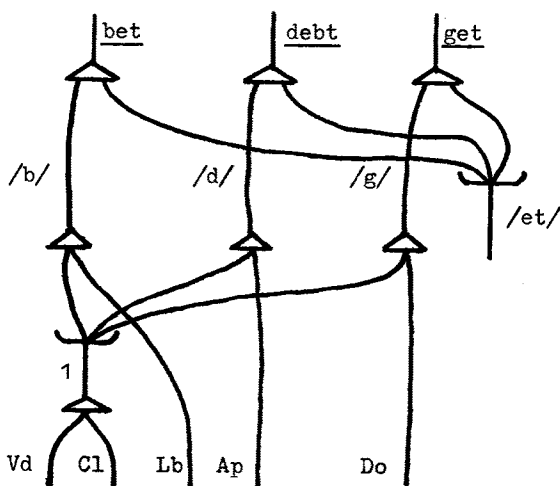


Figure 1. Network showing some of the phonological structure of the morphemes bet, debt and get.

The network of Figure 1 shows the morphemes bet, debt and get as consisting of /b/, /d/ and /g/, respectively, followed by a shared /et/. The phonemes /b/, /d/ and /g/ contain 'labial', 'apical' and 'dorsal', respectively, together with the shared components 'voiced' and 'closure'. Let us now consider briefly some of the most relevant features of the signalling involved in (a) recognizing the /b/ of bet when the signal-to-noise ratio is quite favourable; and (b) trying to recognize the /b/ of bet when the background noise is such that information on the place of articulation of the sound is completely masked. In case (a), particular (non-identical) numerical signals enter the network along the lines labelled 'Vd', 'Cl' and 'Lb'. (The range of values we are using at present is from 0 to 100.) At the lowest node in the diagram the values entering along the two lower lines, from 'Vd' and 'Cl', are averaged and the resulting value is transferred to the line above the node, labelled '1'. At the upward or node at the top of line '1' the value which has come up from below is transferred to each of the three lines coming out of the top of the node. However, these lines are alternatives, i.e. we must ensure that the signal does not continue on upwards along three different paths but takes only one of them. This can be achieved by changing the signal type to 'anticipatory' (from 'regular signal'). At the unordered and nodes representing /b/, /d/ and /g/ the values coming up the two lines from below are again averaged. Since in this case the signal on the line from 'Lb' is non-null and--we will assume--of a reasonably high magnitude (though not as high as 'Vd'), the average value for /b/ is higher than that for /d/ and /g/. The three average values are reported back to the upward or node, which chooses the largest and sends a regular signal up the line in question, i.e. towards /b/. The anticipatory signals on the other two lines are cancelled out. Turning now to case (b), the facts are similar except that no signal is available along the line from 'Lb'. Thus all three phonemes achieve the same score. The upward or then chooses arbitrarily between the three lines, thereby reflecting the fact that in such a situation a listener might interpret the syllable in question as any of bet, debt or get. Of course, we have simplified the discussion by referring only to bottom-up processing. If our noisy bet were occurring in a particular sentence rather than in isolation it is likely that it would be predictable syntactically. Thus its bottom-up score would be boosted by a top-down signal proportionate to its predictability and the choice between bet, debt and get would then no longer be made arbitrarily.

(b) Competing interpretations

Occasionally we consciously reinterpret something we have heard. To take a simple illustration--suppose we have just been introduced to someone by a mutual acquaintance and informed that 'he's a magician'. We then notice that he is carrying a violin case and on the basis of this additional evidence come to the conclusion that the speaker is more likely to have said 'he's a

musician'. We are now aware of the fact that magician and musician are competing candidates in the utterance in question, but musician scores more highly and so is the preferred interpretation. In terms of a model with a semantic level, activation of lexical items in the semantic field of music following a particular act of visual perception (seeing a violin case) gives the necessary boost to the signal associated with musician so that it now exceeds magician and becomes the preferred interpretation. Under normal circumstances when we understand an utterance in a particular way, we are not conscious that a lexical item we have heard at some point in it has attained the highest score of a set of similar items, since in general we are not aware of the existence of the alternative interpretations. Nevertheless it seems a reasonable hypothesis, especially in the light of the additional evidence in (a) and (c), that all constituents of an utterance achieve a particular score, i.e. have particular numerical values associated with them.

(c) Stressed and unstressed syllables

Consonants and vowels are easier to identify in stressed syllables than in unstressed syllables. An obvious way to give recognition to this fact in the model is to associate higher numerical values in our phonetic representations with the sounds of stressed syllables than with those of unstressed syllables.

4. Multiple outputs

There is a certain amount of evidence supporting the idea that the model should allow for outputs from the network at a number of levels, specifically one for each stratum. We will mention two such pieces of evidence.

(a) Relationship between well-formedness and intelligibility

When a listener listens to a string of nonsense syllables, he is more or less successful at identifying what he has heard and in this sense there is an output from the network. But it is an output at the level of the phonology, and there is no higher-level output. If the input to the listener is a string of words which are syntactically well-formed but semantically anomalous, there is an output at the syntactic level--in addition, we would suggest, to one at the level of phonology (this point is taken up below)--but no semantic output. And if the input is semantically well-formed, there is also a semantic output.

(b) Audible slips of the tongue

Slips of the tongue are frequently noticed by the listener, who is thus aware that there is a discrepancy between what was said and what was intended. The formula for commenting on this situation would be something like "What he meant was 'roast beef', what he said was 'roaf beef'". In cases where the intended meaning is

quite clear, the semantic representation which the listener derives depends on his having corrected the error, but at the same time he has access to another, lower-level representation in which the error is preserved.

In normal circumstances, where there is no conflict between the representations at different levels, it seems that the listener attends to the semantic representation. (To be more precise, he attends to the highest of the available representations, which would be a syntactic representation in the case of a semantically anomalous sentence.) But even where there is no conflict between different representations, it is possible to attend also to a lower-level representation--for instance, to concentrate one's attention on the sounds of what is being said at the same time that one is understanding the content.

At the diamond nodes of each stratum (where tactics and realization intersect) our implementation will provide an output for each element that is recognized from below or reconstructed by the tactics. The listener is often unaware of there being outputs from different levels. We regard this as a fact about the attention mechanism, which we are not modelling. Our model would only supply the information that the attention mechanism requires.

Summary

We have discussed four general features of the model, together with the kind of behavioural facts they are intended to give recognition to. The four features are: (1) processing should take place on all levels simultaneously; (2) there should be top-down processing as well as bottom-up; (3) signals sent through the network need to have numerical values; and (4) there need to be multiple outputs from the network. In addition, we gave a certain amount of discussion to the present implementation. This included commenting on the following: the numerical signals take values from 0 to 100; values reaching an unordered downward and node along the separate lines at the bottom are averaged and the new value is sent out along the line at the top; values reaching an unordered upward or node from below are transferred to each of the lines connected to the top; the choice between alternative interpretations of some part of the input is made on the basis of comparing the scores which each achieves; such scores may incorporate a top-down factor as well as a bottom-up factor; and finally, in addition to signal values we also make use of different signal types.

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THE LINEARIZATION OF SPEECH. SOME BASIC PROBLEMS.

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0. Introduction.

Most theories of language assume that one of the principal functions of language is to convert atemporal semantic configurations (ideas, concepts, propositions, the intended meaning) into a necessarily temporal sequence of sounds (encoding) and vice versa (decoding). In this linearization process one generally distinguishes several stages; e.g. the semantic, syntactic, morphological and phonological levels. As neither the speech process nor the system underlying this process lend themselves to direct observation, students of language must, on the basis of the available data, construct a model of language. Thus any linguistic model is determined by the data it is to account for. Data selection, however, depends on an indefinite number of factors, most of which may well be prescientific, or, as Gleason (1972: 113) writes, based on "human judgements, tastes, preferences, biases, or just plain prejudices". To quote him a little further:

...the evaluation of a grammar rests, at best, on a set of a priori decisions as to the admissibility of evidence. In a less happy case, it may rest on ad hoc decisions about the admissibility of evidence, and, since linguists are human, it may be very difficult to eliminate bias from what we would like the outcome to be. At worst, much evidence may never even come before us for appraisal, since our tastes and theoretical commitments may control where we look for evidence.

If this is true, a liberal pluralist attitude ought to be advocated in the study of language as perhaps the only corrective against bias and prejudice. If one adopts such an attitude one can hardly deny that, if speaking takes place in time, the study of the linguistic processes at work in encoding and decoding is one legitimate aim of linguistics. It seems that most theories of language are satisfied with the statement that in speaking, there is a linearization process at work and that they symbolize temporal ordering in their notation (e.g. by left to right ordering). It is evident that this does not provide much insight into the linguistic processes or into the hidden mechanism responsible for linearization

1. The Position of Stratificational Linguistics

The goal of stratificational grammar (SG) is the construction of a performance-oriented model of linguistic competence. This commitment of stratificationalists is quite clear. SG "is intended as a simulation model of what people do when they speak (and listen and acquire language)" (Reich 1977:120). The aim of SG is the development of a "competence model that can serve as a basis for a model of performance" (Christie 1978:248). This commitment has an important consequence: As all utterances, whether correct or incorrect, are products of the same linguistic system, stratificational linguists must admit as evidence "all the sentences people speak" (Gleason 1972:122), and not only a convenient selection. If we are interested in a simulation model we cannot confine our attention to ideal performance. If the original system produces slips of the tongue, hesitation, ill-formed sentences,

etc., then it will be one of the tasks of SG to enquire into such 'malfunctions', because they are, after all, functions of the original system. Perhaps we should take a hint from cybernetics (Beer 1959:122-7) which considers a malfunction a natural and important part of the behaviour of a system. Whatever is, must be possible, and consequently a simulation model of linguistic processing must be able to imitate all types of systematic 'mistakes' that occur in speaking. It must be able to simulate real rather than ideal speech.

As we shall see, more and more stratificational linguists subscribe to this view. The goal is ambitious and there is little probability of its being reached soon, but that does not make it less valid. Some implications of this view will be discussed in sections 6 and 7. The main part of this paper will however deal with a more modest problem, namely the treatment of simple concatenation within the framework of SG. I will therefore begin with a short outline of this framework.

2. Relational Network Grammar

In SG the linguistic code is represented as a network of relationships. Generally speaking, a network is a device relating inputs to outputs. It consists of nodes and lines (or wires) connecting the nodes. The networks of SG relate semantic inputs (at the top of the network) to phonetic outputs (at the bottom of the network) and vice versa. Thus these networks are bidirectional in order to simulate the conversion of semantic inputs into phonetic outputs in encoding, and the conversion of phonetic inputs into semantic outputs in decoding. Outputs are solely determined by inputs and the structure of the network, which is considered as basically stable.

The network model of SG is a competence model which can be used for the encoding and decoding of speech. In encoding the semantics sends input signals down the lines of the network, which then outputs a temporal sequence of signals corresponding on one level (stratum) for instance, to a sequence of phonemes. In decoding the direction of the signals is reversed, thus allowing the conversion of a sequence of phonemes into semantic configurations.

SG networks consist of four basic types of nodes representing four types of relationships: simple disjunction (unordered OR), precedence disjunction (ordered OR), conjunction (unordered AND), and concatenation (ordered AND). Each of these nodes behaves in a specific and predictable manner if a signal comes in. It is essential that this behaviour be clearly defined: If one cannot predict the output of a node from its inputs, how is one to predict the output of an entire network composed of these nodes.

On one level of resolution (macronotation) SG nodes may be treated as indivisible. On a higher resolution level, however, it has been argued (Lamb 1966; Reich 1970a; Schreyer 1980a,b), that nodes may be considered as small input-output systems, representing four different types of relation between input and output signals. As such they admit of definitions in terms of their inputs and outputs; e.g. in Boolean or truth tables or in Karnaugh-Veitch maps. These are easily converted into formulae of Boolean algebra by applying methods developed in switching logic. Since SG nodes are bidirectional, each node must have two Boolean definitions, one for upward and one for downward processing.

To give a simple example: The unordered AND (figure 1) behaves as described in the following verbal statement.

Downward definition: An input signal at a will produce output signals at b and c.



Figure 1: Conjunction

a	b	c
0	0	0
1	1	1

Table 1:

Ddef. Conjunction

b	c	a
0	0	0
0	1	0
1	0	0
1	1	1

Table 2:

Udef. Conjunction

Upward definition: An input signal at both b and c will produce an output signal at a .

If we symbolize the presence of a signal by 1 and the absence of a signal by 0 we can tabulate the input-output relations of conjunction as in tables 1 and 2. From these tables we derive the following Boolean functions:

Downward definition: $b = a$; $c = a$

Upward definition: $a = b \wedge c$

In a similar manner one can derive Boolean tables and definitions of simple and precedence disjunction and of Reich's (1973) interjunction (AND/OR) (cf. Schreyer 1980b). Note that in the verbal definitions of these nodes no reference is made to time. Networks constructed only of these nodes are a-temporal, combinatorial networks. These may be represented in various fashions. There are the block diagrams of switching logic or the cell representation developed by Pitts/McCulloch (1943), a variant of which has been used by Christie (1976; 1977; 1978) in his micronotation of SG nodes. I shall briefly describe this notation and I will demonstrate that it is a type of Boolean algebra.

4. Christie's Micronotation of SG Nodes.

The basic unit of Christie's micronotation is the cell (Figure 2). A cell is an input-output system consisting of a cell body, of input lines and of output lines. All lines are unidirectional.

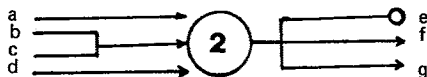


Figure 2: The Cell

Lines end in a terminal which may either be excitatory (arrowhead) or inhibitory (circle). Excitatory terminals attach to a cell, inhibitory terminals to a line. Lines may have two states: If a signal passes through them they are active (potential 1) otherwise they are inactive (potential 0). If two lines converge, their combined potential is 1. If they diverge, the potential of each branch is also 1. An active line with an inhibitory terminal will block an impulse through the line it is attached to. Each cell has a threshold integer indicating the number of input signals necessary for it to fire (i.e. to produce an output signal). The cell of figure 2, for instance, will fire if the number of active input terminals. 2. If we ignore certain aspects of timing irrelevant in this context, Christie's logic is a threshold logic which may be used to represent all Boolean functions.¹ The following are of particular interest in relational networks (cf. Schreyer 1980b).

Interjunction - Adjunction - Inclusive OR

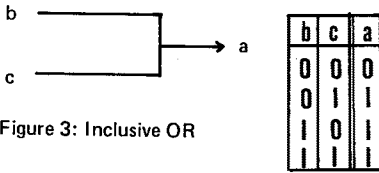


Figure 3: Inclusive OR

$$a = b \vee c$$

Table 3

Inhibit

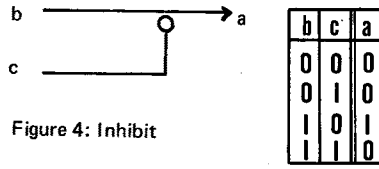


Figure 4: Inhibit

$$a = b \wedge \bar{c}$$

Table 4

Disjunction - Exclusive OR - Unordered OR

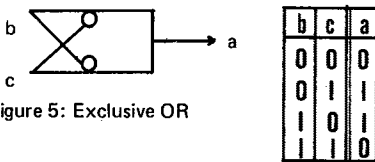


Figure 5: Exclusive OR

$$a = (\bar{b} \wedge c) \vee (b \wedge \bar{c})$$

Table 5

Conjunction - Unordered AND

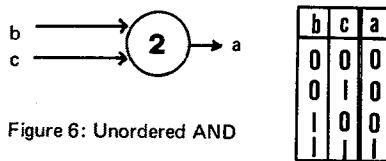


Figure 6: Unordered AND

$$a = b \wedge c$$

Table 6

5. The Concatenation Node.

5.1 Temporal aspects of concatenation. The nodes defined so far are purely combinatorial, as the value of each output function is entirely determined by the combination of the values of the input variables. The same holds true of larger networks composed of such nodes. It is, however, immediately obvious that a network model of the linguistic code cannot be merely combinatorial, if it is agreed that the creation of a temporal sequence of outputs is one of its main functions. Only a sequential network is a possible candidate for a model of language. In SG it is the ordered AND (Figure 7) that is mainly responsible for the temporal linearization of network outputs. It is defined as follows.



Figure 7: Concatenation

Downward definition: A signal at a will produce an output signal at b followed by an output signal at c.

Upward definition: A signal at b followed by a signal at c will produce an output signal at a.

According to the verbal definition c clearly must occur after b. Reich (1970a:21-23) has demonstrated that the time interval between the occurrence of b and c varies: Concatenation cannot be both associative and have outputs (inputs) at fixed time intervals. The variability of time intervals will, however, jeopardize the synchronization of the whole

system, unless we make the additional assumption of a control mechanism for the inputs and outputs of b and c. This is the reason why the feedback hypothesis of network processing has been advanced (Reich 1970a:18-20; Christie 1977:8).

5.2 A simplified feedback description of concatenation. Reich (1970a:18-20; 1972: 262-63) gives the following feedback description of concatenation as a three-state machine (Figure 8).

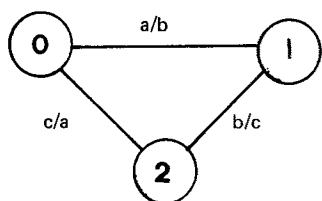


Figure 8: State diagram of concatenation

By definition the node starts out in state 0. When a signal comes into the node on wire a, a signal is sent out wire b and the node changes to state 1. When the structure down path b has been completely realized, a positive feedback signal comes up wire b: When this happens, the node sends a signal down wire c and changes to state 2. When the positive feedback signal comes up c, the node sends a positive feedback signal up wire a and returns to state 0, its initial state.

If we allow only unidirectional lines, this simplified feedback description already necessitates a rather complex internal structure of the ordered AND. In the first place we have to distinguish between 'normal' lines and feedback lines. The node then has three input terminals for inputs from a, from feedback fb and from feedback fc. It has also three output terminals for b, c and feedback fa. This is represented in the diagram of Figure 9.

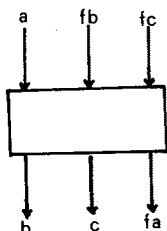


Figure 9

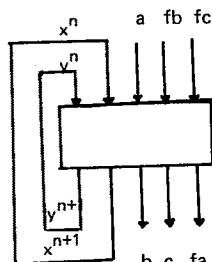


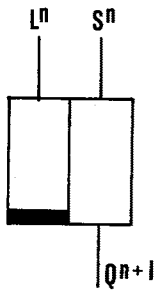
Figure 10

This definition of the ordered AND poses a sequential problem: It describes a function whose value depends not only on the present input but also on former inputs; fc, for instance, depends on the prior input of fb. A node with three internal states, to react properly to different inputs, must somehow 'know' its present state, and since its present state depends on its former state(s) it must remember these too. It follows that, in order to describe the internal structure of this node, we must give it a memory; i.e. we must introduce one or more storage elements. A storage element is an input-output system with at least two stable states, state 1 when it is active and state 0 when it is not. It must change states whenever appropriate input signals arrive. If, as in the definition of concatenation, more than two states are required, these can be represented by a combination of bistable storage elements; e.g. to represent 4 different states we need 22 binary storage elements. The problem of defining concatenation may now be formulated thus: Given a complete description of the input-output relations, is there a principled method of constructing a (micro-)network to model this behaviour?

5.3 The definition of concatenation as a sequential system. This is a problem of sequential logic. We can transform the sequential problem into a combinatorial one by introducing more variables and functions. In Figure 10, an extension of Figure 9, we distinguish between the input variables a, fb, fc, the output functions b, c, fa, the internal variables $\underline{x}^n$, $\underline{y}^n$, and the internal functions $\underline{x}^{n+1}$ and $\underline{y}^{n+1}$. For the combination of all variables we must now differentiate between the state of the independent variables (input state), the state of the memorization or internal variables

(internal state), and the total state. From the total state we can then compute the values of all the functions. How is this done?

Reich's state diagram distinguishes three internal states. To represent these, the combination of two storage elements will suffice. The symbol of the storage element used is shown in Figure 11. S^n and L^n are the input variables at time n , Q^{n+1} the output function at time $n+1$. In order to give a definition of the storage element we must also introduce Q^n , the state of the output function at time n . Table 7 fully defines the behaviour of the storage element. From this we derive the Boolean definition $Q^{n+1} = S \vee (\bar{L} \wedge Q^n)$. The combination of two storage elements will give us four internal states, one more than necessary (Table 8).



S^n	L^n	Q^n	Q^{n+1}
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

X	Y	State
0	0	0
0	1	1
1	0	2
1	1	(3)

Table 8:
Assignment of States

Table 7: Definition
of Storage Element

Figure 11: SL Storage Element

Let us consider state 3 the redundant state. Now we are in a position of establishing the output functions and state transitions as dependent on the inputs and the internal states. Table 9 is self-explanatory. Above each diagonal of a square we list the

State Input	X Y		X Y		X Y	
	0	0	0	1	1	0
a	b		0 1		—	
f b	—		c		1 0	
f c	—		—		fa	
					0 0	

Table 9: Matrix Definition of
Concatenation

output function, below it the new state. We can see that each input variable is only acceptable in one state and that it causes a transition to only one state. There are mathematical methods for converting this matrix into a sequential network, but in our case this can be done without much mathematics. We distinguish three steps.

Step 1: The network in state 0 receives an input a, outputs b and changes to state 1. This is done by sending a signal down S_y .
 $b = a \wedge X^n \wedge \bar{Y}^n$ $S_y = a \wedge \bar{X}^n \wedge \bar{Y}^n$

Step 2: The network in state 1 receives an input fb, outputs c and changes to state 2. This is done by sending signals to S_x and L_y .
 $c = S_x = L_y = fb \wedge \bar{X}^n \wedge Y^n$

Step 3: The network in state 2 receives an input fc, outputs fa and changes to state 0. This is done by sending a signal to L_x . $fa = L_x = fc \wedge X^n \wedge \bar{Y}^n$
As Reich does not allow any other combinations, these formulae represent the complete definition of the network represented in Figure 12.

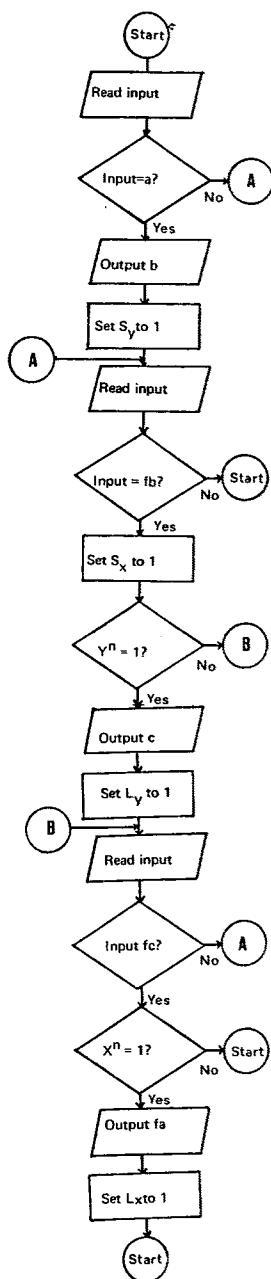


Table 10: Functional Description of Christie's Concatenation Network

remember previous inputs. This is effected by the memory cells. The intended functioning of the network can be represented by the flowchart of Table 10. It shows that in processing all four states occur. But as one state ($X = 1; Y = 1$) occurs for a brief transition period only, the network as a whole may be said to have three different states with the state assignment the same as in Table 8. Thus Christie's micronotation of concatenation defines a three-state machine similar to the one developed in the previous section.²

Nevertheless, there are some important differences which are not made explicit in the flowchart because it cannot represent parallel processing of inputs. First, in Christie's network, output at b does not depend on the state of the network, but solely on input from a . In fact, $b = a$. This means that the network will accept new input even though it has not processed previous input. This may result in races between several feedbacks fb and thus disturb the synchronization of the processing. This is not desirable. A second, but related problem is caused by Christie's assumption that "in decoding signals move upward generally along the same lines used for feedback during encoding" (1977:8). As there is nothing in the network to prevent simultaneous encoding and decoding, this assumption will wreak havoc in the system. For the system to work we must postulate that there should be no time overlap in the processing of a , fb and fc — a postulate implicit in Reich's finite state description of concatenation and made explicit in the network of Figure 12. As Christie uses the same logical relations (albeit of a different form) there is no difficulty in amending his network in the postulated manner.

So far I have tried to demonstrate that Christie's micronotation of the ordered AND meets some, but not all, the conditions in Reich's three-state description of concatenation. But as Reich has pointed out, this description does not suffice, as it does not account, for instance, for finite embedding. His (1977b:445) more complex "modified concatenation node definition" can handle this problem. But as this definition also describes a finite state machine, it may also be represented as a sequential network by employing the same methods.

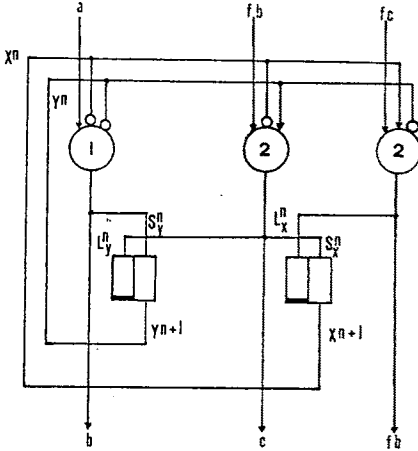


Figure 12: Concatenation Network

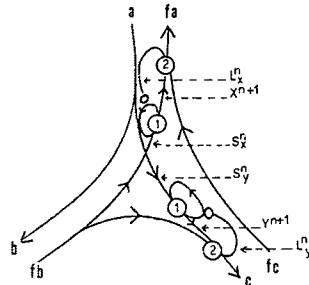


Figure 13: Micronotation of Concatenation

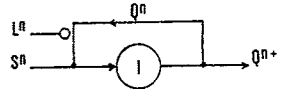


Figure 14: Christie's Memory Cell

5.4 Christie's micronotation of concatenation.

Recently Christie (1978:252) published a similar network of concatenation without, however, indicating how he arrived at it. The most obvious difference is at the same time the most trivial: Christie's network (Figure 13) is made to resemble the shape of the macronode it is to define by distinguishing between downward inputs (a) and upward inputs (f_b, f_c) on the one hand and downward outputs (b, c) and upward outputs (f_a) on the other.² But this is a mere convention. The interesting feature of this micronotation is the introduction of the so-called memory cell (Figure 14). In order to provide for the sequentiality of concatenation Christie uses two of these cells.

The memory cell is a cell with a threshold of 1 whose output terminal loops back to the input side of the cell. This has the effect that after one input the cell will produce a continuous sequence of output signals. It would keep firing forever if it could not be stopped by a signal from an inhibitory terminal L^n . Thus the memory cell may be considered a primitive, erasable memory. It has two stable states, active (1) and inactive (0), and it will change state only on the appropriate input. The memory cell is, therefore, a bistable storage element. It must be definable by a Boolean table.

Unfortunately Christie's verbal description of the behaviour of the cell is not complete. He writes:

If an impulse moves along a line or branch to which is attached an inhibitory terminal that was active at time t , then ...the impulse is blocked from movement along the affected line at time $t+1$Once this cell is caused to fire by the arrival of an excitatory impulse, it continues to fire itself until it is turned off by the arrival of an inhibitory impulse. (Christie 1978:251)

Nevertheless this description in combination with the diagram of the memory cell would seem to suggest that it is identical with the SL storage element (Figure 11, Table 7). If this is correct, the memory cell is a storage element where storage has precedence over inhibition (L^n).

Christie's description of the ordered AND demands that in encoding its outputs b and c occur in sequence, and that in decoding it should produce an output if and only if the input sequence is bc (Christie 1978:250). In both cases, then, the node must

6. Linearization and Memory

Any device converting simultaneous (parallel) inputs into sequential (linear) outputs needs some delay mechanism. If we adopt the feedback hypothesis of linguistic processing — and I cannot see how else we can account for it — a step-by-step model of the processes will necessarily have to introduce the concept of memory or storage. Consequently a network on this resolution level must employ a specific storage element — call it a memory cell or something else. The concatenation node is the most obvious example of a node involving storage elements. But whenever time plays a crucial part in the signalling processes taking place in relational networks, storage element will be indispensable, whether simultaneous signals have to be transformed into sequential signals or vice versa. Just how and where signals are stored for further processing depends on the psycholinguistic facts.

So far I have only discussed concatenation, but there are other well-known linguistic phenomena that cannot be given a performance oriented description without recourse to time and thus to memory. One of them is conditioning.

Conditioning takes place on all linguistic levels whenever there is a choice between two or more alternatives (if we except free variation). If it is assumed that generally in speaking the selection of alternative possibilities is motivated, a model of linguistic processing must include a selection mechanism. For example, "whenever there is vocabulary selection, there must be either selection information available or the network must be able to actively seek and obtain that information" (Reich 1970c:22). In SG vocabulary selection, and, for that matter, selection of all Emes is effected by the DIAMOND node which connects the realizational part of the network to the tactics.

In the macronotation all alternatives are represented by ordered or unordered ORs (Figure 15). In order to decide whether the b or c wire of the node should be chosen

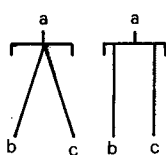


Figure 15

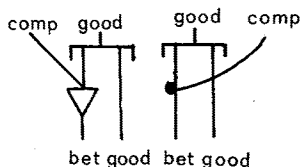


Figure 16

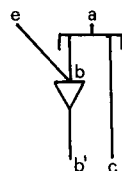


Figure 17

in encoding, the network needs additional information. This conditioning information is fed into the network via an inverse conjunction attached to the pertinent output wires of the OR (Reich 1970c) or via an ENABLER (Lockwood 1972:85). But whichever symbolism one prefers, the function of the nodes must be the same. In our example (Figure 16) a signal may and must only go down the bet-wire if there is a signal from comparative.

Environmental conditioning has important implications for the construction of relational networks. In terms of time we may distinguish three types of conditioning (Figure 17). Inputs e and b may be simultaneous, or e may precede b, or b may precede e. Because of the asynchronous processing of the network simultaneous inputs will be rare. If, however, sequential inputs are the norm, then all nodes providing for conditioning must contain storage elements in their microstructure. Otherwise they would not be able to remember previous inputs. I presume that this is why Christie (1977:12-13) introduces memory cells into his mincnotation of the upward unordered AND (inverse conjunction) and into the DIAMOND node. The same aspects of sequentiality in feedback processing led to Christie's (1976) use of memory cells for the definition of the downward ordered OR and to Reich's (1970a) description

of nodes as finite state machines.

7. Slips of the tongue and Linearization

In recent years linguists have become aware again of the existence of a type of utterance that has great theoretical interest for linguistics, the so-called slips of the tongue. Fromkin (1973:111) stresses that "such errors can tell us something about a process that is otherwise unobservable, and about the abstract grammar that underlies linguistic behavior". She writes:

By carefully studying speech errors we can get a view of the discrete elements of language and can see the grammatical rules at work. We also can look into the mental dictionary and get some notion of the specifications of words and how the dictionary is organized. Throughout history men have speculated, theorized and conjectured about the nature of human language. Speech errors can provide good data for testing some of these theories. (Fromkin 1973:116)

Fromkin demands that all varieties of speech error "must be accounted for in a model of speech production" (cf. also Gleason 1972). Given their theoretical commitment it can hardly be surprising that stratificational linguists show an increasing interest in slips of the tongue (cf. Sullivan 1977:401; Christie 1977:59-64; Reich 1977; Reich & Dell 1977a; Dell & Reich 1977). Dell & Reich (1977:2) define a unified model of slips of the tongue "which will not only account for the three types of slips of the tongue data, but a model which will be linguistically adequate in the sense that it will handle all types of constructions known to occur in natural language, and one that will explain other types of language data, such as the tip-of-the-tongue phenomenon and the type of information we are now learning in experiments on semantic memory".

This research has shown that the present feedback models employed in SG are not capable of handling certain speech errors (e.g. anticipation errors). If "the syntax waits to send the $n + 1$ st word to the phonology until the n th word has been output and a feedback signal has been sent to it from the phonology", the anticipation of a phoneme in a word that follows the n th word cannot be explained (Reich 1977:123). Reich suggests that the present feedback model is too tightly yoked and that it should be replaced by a loosely yoked system by inserting circular buffers between the components. This means that the explanation of anticipation errors necessitates the introduction of one or more delay mechanisms into the processing system, as information must be storable on various levels of linguistic processing. A realistic model of linguistic processing will have to be judged by its ability to explain slips of the tongue such as the one discussed by Fromkin (1973:114-15):

*a burly bird instead of an early bird

It is interesting to note that Fromkin's analysis leads her to assume the existence of "a kind of buffer memory before segments, or features, or words are disordered". The number and nature of such buffers in a relational network description are still to be determined (cf. Reich 1977:123-26). But the evidence from slips of the tongue demonstrates that simple sequential ordering is only one factor in a linearization process that is vastly more complex.

8. Conclusion

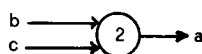
A performance oriented model of language must account for the fact that speaking takes place in time. Consequently SG networks must provide for temporal ordering. Reich's simplified three-state definition of the concatenation node can be transformed into a sequential network by employing methods developed in the logic of switching circuits. Whether one uses the symbolism of switching logic or the symbolism developed to represent abstract neural networks is a matter of indifference. In principle, all finite automata may be represented by sequential networks. This is a task still to

be performed in the case of SG nodes with storage elements, which may be needed in the type of asynchronous processing required by the feedback hypothesis.

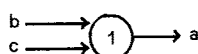
The structure of a sequential network obviously depends on its function. New insights into the linearization process, gained, for instance, through the analysis of environmental conditioning, slips of the tongue or pathological speech disorders may force stratificationists to revise their networks. What a model can do depends in the last resort on the data it is to account for.

NOTES

1. I attempted to do something like this in Schreyer (1980b) by adapting the nodes used in the macronotation of SG. I believe now that this was a mistake, first, because it was superfluous, and second, because a reader may easily mistake the adapted nodes for the original ones. He may not realize that the original nodes are bidirectional while the adapted ones are strictly unidirectional. George (1962) suggests a cell notation which seems a slight improvement upon Christie's notation. One significant difference is that in George's notation the inhibit terminal always attaches to a cell. I shall therefore employ his notation. Some examples:



Conjunction



Adjunction



Inhibit

2. For ease of comparison I have changed the labelling of Christie's network.

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TOTAL ACCOUNTABILITY IN A MULTISTRATAL THEORY OF LANGUAGE

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0. INTRODUCTION. Charles F. Hockett first made the principle of TOTAL ACCOUNTABILITY explicit in the following definition:

Every morph, and every bit of phonemic material, must be determined by (i.e. predictable from) the morphemes and tagmemes (if any) of which the utterance is composed. (1947:332).

He further pointed out that Zellig Harris (1942) had rigorously adhered to such a principle, even though Harris never stated it explicitly.

The present paper examines this principle, whose articulation was originally part of a proposal for an explicitly bistratal theory of language, in regard to its applicability to modern stratificational theory, whose versions have usually included three or more distinct layers of linguistic structure. It is argued in particular that such a principle lends great coherence and systematicity to a multistratal model, and with this in mind, the degree to which various proposals for allowing some portion of meaning-structure to directly condition morphological or phonological phenomena can be made to conform to this principle is discussed. As a preliminary to that discussion, some comparison of Hockett's original proposal for total accountability are compared with some earlier ideas of Bloomfield.

1. TOTAL ACCOUNTABILITY vs. TOTAL ARTICULATION. The work of Harris and Hockett in refining notions about the relationship between phonemes and morphemes is generally viewed as an advance over the views expressed on this subject in the earlier work of Leonard Bloomfield (1926, 1933). Hockett in particular was trying to develop an explicitly bistratal theory of linguistic structure, as can be further seen in his proposal of the same period for a hierarchy of phonological constituent structure separate from the constituent structure associated with syntactic structure (1955). Hockett's view, in other words, was coming to resemble a modern stratificational theory with its multiple tactic patterns, though his model had just two strata.

In the work of Bloomfield, the principle of total accountability is neither explicit nor implicit, but this is not to say that he violates it. Rather, Bloomfield insisted on a more stringent requirement which demanded more than total accountability. This principle is here termed TOTAL ARTICULATION, and it is most succinctly and directly stated in the requirement that 'every complex form is made up entirely of morphemes' (1933:162). Since forms are combinations of phonemes in Bloomfield's view, every form, and ultimately every utterance can be articulated both into phonemes and into morphemes. This much is implied by

Hockett as well, but Bloomfield went further in his requirement that the complex form be made up *entirely* of morphemes. Such a requirement yokes phonemic and morphemic articulation tightly together, treating the phoneme/morpheme distinction as a size-level distinction of the sort some later linguists have termed RANK. Phonemes are taken to make up morphemes, just as morphemes make up words, words make up phrases, etc.

Hockett, on the other hand, was beginning to see that phonology has its own hierarchical arrangements, independent of those of morphology (1955), and he required only the predictability of phonological form from grammatical form. He allowed, for example, empty morphs, which violated Bloomfield's requirements in postulating some phonemic material which did not belong to any morpheme.

The step from a model with total articulation to one with total accountability also had the effect of assimilating the view of the morpheme-to-phoneme relationship to the view which had been developing of the phoneme-to-allophone relationship. In Bloomfield's view of the phoneme, after all, only some phonetic properties were taken to be distinctive and represent the phonemes of the language. The remaining phonetic properties were treated as what amounted to empty elements predictable on the basis of the distinctive material. Hockett's proposal to similarly allow some phonemic material--the empty morphs--to be morphemically irrelevant is thus a step in the establishment of the proportion

MORPHEME : ALLOMORPH :: PHONEME : ALLOPHONE.

This move had, of course, begin with Harris, in his proposal that the morpheme alternant (later the allomorph) rather than the morpheme itself, is composed of phonemes. These classic articles by Harris and Hockett mark an important break away from Bloomfield's tightly yoked view of the relationship between the morpheme and the phoneme, and a move toward a view based on a strong parallelism between the relationship of a morpheme to its phonemic manifestations and the relationship of a phoneme to its phonetic manifestations. In retrospect, we can see this development as an important step toward the stratificational view of language.

Hockett's proposal for empty morphs, it should be noted, did not escape criticism, some of it phrased in terms of adherence to Bloomfield's views. Consider, for example, Nida's objection:

Rather than postulate structural units whose position and distribution must be described (if the description of the language is complete), but which are supposedly morphemically irrelevant, it would seem much safer, as well as structurally more valid, to follow Bloomfield in contending that 'every complex form is made up entirely of morphemes'. (1948:427)

Other Neo-Bloomfieldians, such as Lounsbury (1953) accepted Hockett's view that empty morphs are to be allowed in special cases to simplify the analysis. Nida's objection in terms of

'safety' and 'structural validity'--whatever these are supposed to mean--strike one as vague statements of personal judgment supported only by appeal to Bloomfield as a classic authority.

2. TOTAL ACCOUNTABILITY IN A MULTISTRATAL MODEL. Beginning in the late 1950's, Lamb and Gleason began to extend the bistratal Neo-Bloomfieldian model to include additional strata, initiating what we now know as the stratificational family of schools. Since the notion of total accountability was important in the earlier extension of the essentially monostratal Bloomfieldian model to a bistratal view, it seems logical that a similar relation would be posited in relating three or more strata. Hockett's definition can be reworded to apply to multistratal conceptions as follows:

Every emic element of a given stratum must be determined by (i.e. predictable--apart from free variation--from) the emic elements of the stratum immediately above it in the stratal hierarchy.

This rewording essentially generalizes from the phonemic/morphemic terms appropriate to a bistratal model to a statement applicable to the emic units of an indefinite number of hierarchically-arranged strata. The term EMIC UNIT also deemphasizes the Bloomfieldian distinction of morphemes and tagmemes, which was generally to be abandoned soon after Hockett wrote. The term STRATAL HIERARCHY is meant to refer to the arrangement of strata one above the other in a particular manner whose details may vary from one multistratal model to another. Lockwood 1972 proposes gnostemic over sememic over lexemic over morphemic over phonemic over phonetic, to give just one version. Finally, the insertion of a reference to the possibility of free variation is intended to avoid the claim of prediction to a greater degree than the facts allow.

Why does it seem reasonable to extend total accountability over three or more strata in the manner suggested by this rewording? There appear to be two major reasons, one relating to the historical development of stratificational theory, and the other relating to the practical task of representing the analyses of texts which are assigned by the various stratal systems of a multistratal model.

The historical reason arises from the fact that the stratificational view has generally insisted that relations similar to those which Bloomfield saw between phonemes and sounds, and which Neo-Bloomfieldians such as Harris and Hockett extended to relations between the morphemic and phonemic levels, also exist at additional levels of linguistic structure. Such a notion has been the essence of the STRATIFICATIONAL part of stratificational linguistics. The idea of total accountability arose, in other words, with the development of the first bistratal model by the Neo-Bloomfieldians. The more elaborated stratificational models which came later have involved the postulation of more levels at which similar sorts of realizational relations have been assumed to obtain. It has seemed natural and logical to assume further

that the principle of total accountability applies between various pairs of adjacent strata in the newer models, just as it applied between the two strata of the older model.

The more practical reason relates to the desire of linguists to devise transcriptional systems for representing the analysis of texts according to the principles of their models. A bistratal model implies two levels of representation, the phonemic and the morphemic. In the more elaborated stratificational models, it has generally been assumed that it should be possible to produce analogous transcriptions reflecting the analysis of texts on each level involved in the model. This observance of the principle of total accountability has helped to guarantee that the transcriptions implied by the linguistic system would be complete in the sense of omitting only those parts of the text--such as empty morphs--which are predictable from what does occur. The completeness of the transcriptions associated with each level of description has thus constituted a further motivation for the extension of total accountability to multistratal models.

3. TOTAL ACCOUNTABILITY AND RECENT STRATIFICATIONAL MODELS. Until about 1970, stratificationists generally assumed total accountability implicitly by adhering to it in practice and affording it no theoretical discussion. This section discusses some models from the 1970's in which stratificationists have appeared to violate this constraint.

3.1 THE STRATAL BYPASS. The first stratificational proposal in apparent violation of total accountability was put forth by Lamb in the following terms:

...there must somehow be direct links from morphemes to meaning, bypassing the lexemic and sememic strata. Similar considerations at the lexemic stratum indicate that there must be connections from the conceptual system to the lexemic stratum, bypassing the sememic. Thus one arrives at a scheme in which some points of the conceptual network connect to the sememic stratum, some to the lexemic, and some to the morphemic. (1971:120).

This view is clearly violative of the requirement of multistratal total accountability as outlined in section 2 above.

In a similar vein, Ernst-August Müller has proposed that certain connections affecting the phonological realization of a sememe S/CONTRAST/ via contrastive stress should go from the semology directly to the phonology of English, bypassing the intermediate lexemic and morphemic strata (1978:82).

To demonstrate the effects of such proposals, the following analogy in a Neo-Bloomfieldian context may be suggested. Let us grant, first of all, that even a bistratal model of the type developed by Harris and Hockett can be said to have extralinguistic strata of meaning and sound in addition to the structural phonemic and morphemic strata within language, so we have four strata of one sort or another. Suppose, however, that a student of a Neo-Bloomfieldian presents his mentor with an analysis in which some

morpheme is treated as having a phonetic manifestation, but is taken to have no phonemic realization. It seems obvious that the hypothetical Neo-Bloomfieldian would be appalled at such a suggestion, since morphemes are always to be manifested in terms of phonemes, and it would be violative of the phonemic principle to assert that phonetic material important in regard to the manifestations of some morpheme is nevertheless phonemically irrelevant. Analogous objections would certainly be voiced to a proposal that a meaning is signalled directly in the phonology, with no corresponding morpheme involved: a meaningful phonemic difference will necessarily correspond to some morphemic difference.

These analogies are the closest possible in the context of the bistratal Neo-Bloomfieldian model. They may seem unfair or imprecise to some observers, in view of the extralinguistic nature of the semantic and phonetic levels on which they depend. In Lamb's proposal as quoted, however, we do have connections from the apparently extralinguistic conceptual system to the lower strata. No precise analogy can be made, however, with Müller's proposal for skipping from one structural stratum, the sememic, to another non-adjacent one, in his case the phonemic. Despite their limitations, these analogies should give some notion of the sort of reaction that proposals for stratal bypasses may raise in the minds of those who have implicitly assumed applicability of total accountability between any pair of adjacent strata in the stratificational hierarchy.

At any rate, it must be concluded that the proposals mentioned are quite clearly violative of the principle of total accountability, and if they are to be allowed, it means that this principle must be either abandoned or drastically modified in order to allow for these exceptions.

3.2 THE ECLECTIC INTERFACE. Another proposal which could be viewed as a violation of total accountability is Earl Herrick's suggestion (1977) for an eclectic interface in his model for stylistic alternation. Herrick proposed that in addition to a semantic interface between human experience and the semology, there is also an eclectic interface connecting to various alternation (and possibly tactic) patterns. Connections through this proposed interface allow extralinguistic considerations to control stylistic choices. The considerations involved in such choices range over such factors as age, sex, or ethnicity of speaker and/or addressee, geographic location, social class, degree of intimacy, etc. In this model, connections go from outside language, in other words, to the linguistic system at various points below the semology.

Herrick proposes, in effect, that the cognitive or conceptual system interfaces with language at the semology for cognitive meaning, but at an eclectic interface alongside various lower stratal systems for stylistic meaning. Both Lamb's 1971 version of the stratal bypass and Herrick's proposal, in fact, can be viewed in terms of the diagram of Figure 1.

For Lamb's proposal, connection from the conceptual system directly to lexology, morphology, or phonology constitute

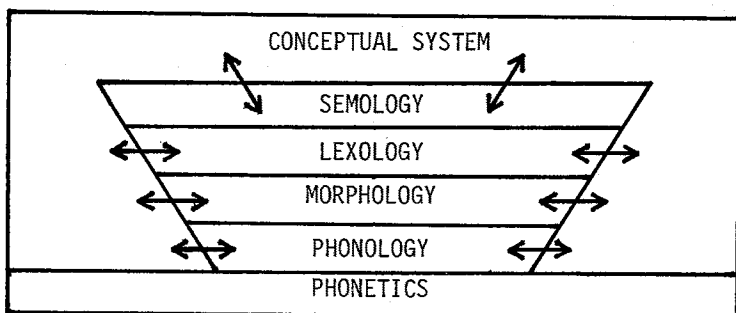


Figure 1. *A model of relations between Language and Concepts.*

the stratal bypasses, to be distinguished from the direct connections from the conceptual system to semology.¹ In Herrick's system, the connections from the conceptual system to the semology are said to form the semantic interface, while those with the lower strata, shown along the sides, form the eclectic interface. The extralinguistic portions would seem to form part of a single system, however, since the factors which have stylistic effects can also be directly expressed in language.²

The diagram does not directly reflect the major difference between Lamb's proposal and Herrick's, which is the restriction of the eclectic connections to matters of stylistic meaning, whereas Lamb, to judge from his examples, would allow his stratal bypasses to deal with cognitive meaning as well.³ This distinction makes Herrick's proposal, as interpreted here, much more defensible in terms of the spirit of total accountability than Lamb's. To allow for Herrick's system, in fact, we need only to introduce the word *stylistic* in place of *free* in the parenthetical phrase describing the exclusion of free variation, so that the revised statement of total accountability reads:

Every emic element of a given stratum must be determined by (i.e. predictable--apart from stylistic variation--from) the emic elements of the stratum immediately above it in the stratal hierarchy.

Herrick's proposal thus depends on the widely recognized distinction between cognitive and stylistic meaning, while Lamb's version depends on a further, not nearly so obvious, distinction of types of cognitive meaning according to their relevance to semology, lexology, morphology, or phonology. An equally simple accommodation of total accountability to Lamb's proposal is simply not possible, because this proposal violates the spirit, not just the letter, of total accountability.

Still a different case are proposed by-passes within the set of properly linguistic strata, such as Müller's proposed semo-phonological bypass for the realization of a sememe *S/CONTRAST/* in terms of contrastive stress. Such a proposal appears to reflect a common prejudice which places suprasegmentally-realized phenomena in the phonology alone, while allowing segmentally-

realized phenomena to be reflected in lexemes and morphemes as well. Suppose, for example, that the alternate realization of the contrastive sememe were a suffix with segmental phonological realization rather than a simulfix with ultimate realization in terms of stress. It seems doubtful that Müller or others similarly inclined would propose a bypassing treatment in such a case. Such details of substance, however, ought not have such a heavy influence on one's catalysis of linguistic form. Viewed in terms of form, the difference between stress realization and a suffixal realization is a very minor matter, and the two situations should be treated in as parallel a manner as the data will allow. And a direct treatment of both would seem to be indicated, since a bypassing treatment would violate total accountability by assigning identical lexemic and morphemic representations to texts showing correlated differences on the sememic and phonemic strata.

4. TOTAL ACCOUNTABILITY IN MULTIMODAL MODELS. Some recent versions of the stratificational model incorporate, in addition to stratal and rank distinctions, the possibility of more than one simultaneous classification of the material of a single stratal system. This section is intended to draw attention to the meta-theoretical distinctions involved in such models and to explore its relation to the total accountability requirement.

4.1 STRATUM vs. MODE. The distinction between the notion of stratum and the concept which will be termed mode may be seen most clearly by a comparison of stratificational models of the more usual sort (Lamb 1966, Gleason 1964, Lockwood 1972) with the classical version of tagmemic theory as set forth in Pike 1967. Both theories recognize distinctions of structural rank and observe that there is more than one hierarchy of rank operative in language structure. In the stratificational model, however, the various rank hierarchies are arranged in a different realizational hierarchy of strata. Figure 2 shows a four-stratum model with the stratal hierarchy perpendicular to the rank hierarchy. In classical tagmemics, on the other hand, a stratal relationship of the rank hierarchies is explicitly denied. Instead, the three rank hierarchies are taken to be simultaneous, partially interlocking, but essentially independent MODES of analysis for the same material. So these contrasting models show the possibility that different rank hierarchies may alternately be seen as stratially ranked, as in stratificational models, or as simultaneous modes, as in tagmemics.

4.2 MODAL DISTINCTIONS IN STRATIFICATIONAL MODELS. During the 1970's, various proposed stratificational models have shown that stratal and modal distinctions can be conceived of not just in alternative models, but can be combined in the same model. A model proposing just this kind of synthesis is seen in Lamb 1979. This model contains just two structural strata of expression and content. The stratum of content is able, Lamb claims, to deal with the crosscutting classifications that he formerly relegated to separate sememic, lexemic, and morphemic strata. At present, this proposal is too vague in its outline to be fully evaluated,

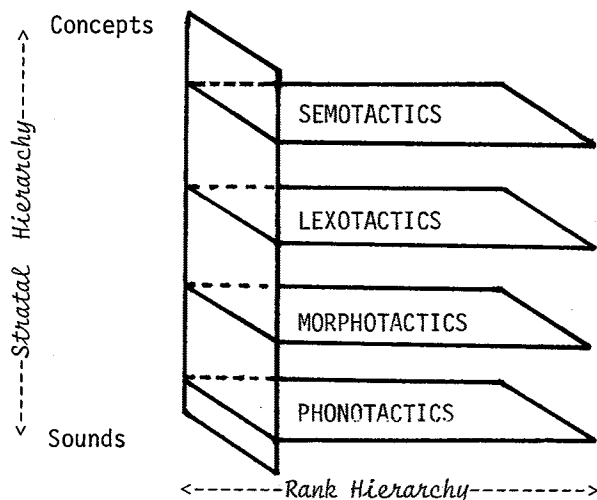


Figure 2. *Stratal and Rank Hierarchies in a Stratificational Model.*

and much more extensive exemplification and application to data would be necessary to dispell understandable skepticism. Regardless of the merits of Lamb's detailed proposal, however, it does serve to point up the possibility of modes within strata, and thus the incorporation of distinctions of both types into a single model.

Another proposal made over the past decade has been developed by Christie and Murray under the impetus of an unpublished idea of Lamb's from the early 1970's (Christie 1977, 1978, Murray 1977). This view appears to be intermediate between the strictly stratal classical stratificational view, and the heavily, though not completely, modal view of Lamb 1979. It relates three strata--sememic, lexemic, and morphemic--to a single "free-hanging" lexicon. The three strata are still taken to have some sort of hierarchical arrangement, on the one hand, so the model is not strictly modal. Its effect, on the other hand, is to impose three different classifications on the same material in much the same manner as Lamb's newer proposal.⁴

4.3 MODAL vs. STRATAL DISTINCTIONS AND TOTAL ACCOUNTABILITY.

There are many unsolved problems connected with the fuller use of modal distinctions in stratificational models. They include not only the problem of formalization in a relational network, but also the need to explore the various avenues opened up by the allowance of modal distinctions in combination with stratal distinctions--a large number of possible combinations of these are conceivable. Despite such problems, however, the consideration of total accountability would seem to make multimodal models worth exploring, because they may offer a way to deal with the same apparent problems which have led to the proposal for stratal bypasses without any violation of total accountability. This

would be true because total accountability governs the relation of strata, not that of different modes of the same stratal level, so the structure of a stratum would presumably include anything relevant to any of its modes.

Pending the development and testing of a satisfactory modal model, a model of the type sketched in Figure 1 appears to be the best type of model to use, since it is the only fairly well-developed model which allows a complete adherence to total accountability. In the meantime, a more thorough exploration of the possibilities of multimodal models of grammar, and perhaps phonology as well, should prove interesting, and perhaps also fruitful.

N O T E S

- 1 See Fleming 1978 for a similar model of the relation between conceptual and linguistic structure.
- 2 Herrick's model also contains a series of rudimentary tactics in its eclectic portion. In the conception proposed here, it is suggested that these tactic patterns are also part of the conceptual system.
- 3 Following Bennett (1975:198) it is assumed here that the relevant types of meaning include at least the cognitive, the stylistic, and the emotive.
- 4 With respect to the organization of grammar, it can perhaps be accurately said that contemporary stratificationalists can be divided into STRATALISTS, MODALISTS, and QUASIMODALISTS.

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TOWARDS A STRATIFICATIONAL DESCRIPTION OF COLLOCATIONS

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1. INTRODUCTION

It has recently been argued, especially by D. Bolinger, that collocations such as juvenile delinquency, artful dodger and out of patience are, although transparent and analyzable, pre-set complex units of language, that they are stored as wholes in the minds of its speakers and that in speech production they are normally retrieved at once from memory storage as unanalyzed wholes (cf. Bolinger 1975, 1976, 1977a; Greenbaum 1974: 80-81). If this holistic view of the phenomenon proves correct, theoretical linguistics should all the more be able to identify the collocations of a particular language and express the linkage existing within such idiom-like constructions 1).

In American linguistics, there are only a few tentative and programmatic proposals on how to integrate the description of collocations into the framework of linguistic models. For transformational grammar, S. Greenbaum (1970: 86-87) has given no more than a few suggestions on how to deal with collocational restrictions in a transformational lexicon. Within stratificational theory, A. Makkai (1972: 55-58; 1977) has clarified some aspects of collocations by distinguishing between 'idioms of encoding' or 'phraseological idioms' and 'idioms of decoding' or 'semantic idioms', but he has refrained from formalizing this distinction by means of the stratificational graphic notation 2).

The reasons for the neglect of collocations in current linguistics may be found both in the properties of the constructions themselves and the principles underlying linguistic theories. Linguistic theories are specifically designed to identify and explicate the functionally relevant elements of language and the kinds of constructions employing these elements. In the process, theories tend to operate on an all-or-none basis of identification and classification, committing themselves explicitly or implicitly to the principles of descriptive simplicity and exhaustive description as laid down by Hjelmslev (1961) and other theoreticians. It is true, collocations are not functional units comparable to phonemes or morphemes; collocational linkage is a matter of degree similar to idiomaticity or grammatical acceptability, thus excluding the possibility of a simple dichotomous classification; collocations are contingent upon dialectal and even idiolectal variation, thus in principle precluding an exhaustive description; finally, the descriptive integration of collocations results in a certain redundancy, for collocations will, in the event, be doubly identified as grammatical constructions and as habitual constructions of the language. But since collocations are a linguistic

fact, any linguistic theory should account for them by trying to describe them in so far as such constructions permit of generalizations.

The description of idioms has proved to be a major theoretical stumbling block for transformational grammar (cf. Chafe 1968) so that one may hardly expect a successful treatment and descriptive integration of collocations to be achieved by their proponents, all the more so since they are preoccupied with a kind of linguistic competence in whose domain collocations do not belong. Generative semanticists being engrossed in the exploration of universal semantic components seem to have as yet not regained a clear view of language-specific phenomena, of which collocations are undoubtedly an example. On the whole, it is doubtful whether linguistic models operating with transformations can mirror the psychological facts of language processing in any realistic way, and various factors seem to corroborate the assumption that a relational description is superior to a mutational approach in the analysis of both the language system and language behavior (cf. Lamb 1975). It is one of the goals of stratificational grammar to develop a model of ideal performance which is compatible with a relational network theory of competence and it has even been claimed for stratificational theory and its notation that they are adaptable to the representation of neurophysiological notions and findings concerning the human brain (Lockwood 1972: 9-10, 281-83). Results of investigations undertaken on speech error data have recently been explained in terms of the network notation of stratificational grammar, and it has rather convincingly been shown that stratificational theory, although it is primarily intended to be a linguistic model, can better live up to the claim of being also a psychological model than any other current linguistic theory (cf. Reich 1977; Dell and Reich 1977).

In this paper, collocations are to a large extent considered from the viewpoint of associational psychology. On account of its secondary goal, stratificational theory can thus be expected to be most successful in dealing with problems of collocations. It will however be shown that for this purpose its traditional graphic notation must be supplemented by a new macro-notational device which we may call associative lines. Such lines seem likely to ensure a sufficient description of collocations and to be capable of simulating their encoding and decoding in a realistic way. We furthermore claim that these lines will be a useful and adequate device for the description of a related syntagmatic phenomenon which is generally known as selectional restriction. Selectional restrictions have been intensively studied in the last fifteen years and, unlike collocations, they have been more successfully integrated into at least those linguistic theories which are semantically based (cf. Kastovsky 1980).

2. THE METHODS, IMPORTANCE AND FEASIBILITY OF COLLOCATIONAL ANALYSIS

A few remarks may be added on the methods, the importance and feasibility of collocational analysis. Collocations can be identified

by frequency counts of words co-occurring in written or spoken texts, or may be ascertained by elicitation experiments with native informants. Word-association tests which have been undertaken by linguists (e.g., Greenbaum 1970; Bäcklund 1976) and psychologists (cf. Postman and Keppel 1970; Clark 1970; Esper 1973; Clark and Clark 1977) confirm that test persons agree to a considerable extent in their syntagmatic responses to a verbal stimulus or stimulus construction. Furthermore, in a comparative study of verb-intensifier collocations undertaken with British and American students, it has been shown that while there may be absolute frequency variations in the collocational range of a given intensifier stimulus, the relative frequency order of the principal collocates, i.e. verbs appearing in at least ten per cent of the responses to an item, is almost identical for both informant groups (Greenberg 1974). What the elicitation experiments seem to suggest is that many collocations have a supraindividual and interdialectal psychological validity. Such habitual collocations are at least partly systematic in the language and have a semifunctional relevance on a theoretical linguistic level which lies midway between *langue* and *parole*. This level E. Coseriu (1952/75) has termed *norm*, without however explicitly assigning collocations to it. Certainly, even the exhaustive description of only the more habitual collocations is a laborious enterprise, but it seems, in principle, to be feasible, if the description is further restricted by factors to be mentioned shortly. It will serve to complement the structural analysis of language by providing some insights into how words are chosen in speech production and disambiguated in comprehension.

It goes without saying that questions pertaining to the collocability of words such as 'which of several synonyms goes with a certain word?' and 'are there rules for the combinability of words other than syntactic ones?' are of great importance in second-language learning and its teaching. Indeed, for non-native speakers of English, even if they have gained considerable proficiency in the language, collocational restrictions are a permanent source of errors. This alone would, in our opinion justify an intensive study of collocations and their formal description by theoretical linguistics.

3. TYPES OF CO-OCCURRENCE RESTRICTIONS

Whether two or more words can co-occur in a sentence is constrained by various factors. The most conspicuous restrictions concern such properties of lexical items as their membership in form classes, their transitivity or intransitivity, and their ability to take complements. These are syntactic facts which in stratificational grammar can rather easily be described as lexotactic properties of lexemes. While such syntagmatic constraints have not normally been regarded as collocational, all of the other syntagmatic restrictions have been subsumed under the label collocational restrictions at least by some authors (e.g., Palmer 1976).

Two main types of collocational restrictions may be distinguished. The first type is illustrated by such unacceptable con-

structions as *yesterday night, *juvenile crimes, *a high likelihood, and *give something choice. Their unacceptability cannot be explained in terms of semantic restrictions on the words, but seems solely to result from a conflict with conventional usage which requires the speaker to use last night, juvenile delinquency, a strong likelihood, give something preference instead. Such compulsory attractions may be viewed as being collocational in the strictest sense because they appear not to involve meaning (cf. Palmer 1976: 97). It is these syntagmatic restrictions that pose the greatest problems for non-native speakers, and yet, strangely enough, they have most been neglected by linguistic study and almost completely ignored in the evaluation of association tests undertaken in experimental psychology.

It is typical of the other group of collocational restrictions that they may be explained in terms of semantic generalizations which concern the collocating items. Such constraints are more generally known as selectional restrictions, a term which, however, only has a validity in process grammars. Restrictions of this kind are so numerous and vast that linguistics should aim at finding justification of confining the description to those restrictions which are most relevant to the language. Such justification may be found in the customary distinction made in linguistics between the native speaker's knowledge of his language and his knowledge of the world (cf. Lyons 1977: 418-22), and also in the potential sources of error the restrictions represent for non-native speakers. Clearly semantic conditions of a referential kind prevent such constructions as *a blue canary or *The proposals are laughing. Neither native nor non-native speakers will make such utterances under normal conditions. The rarity or almost non-occurrence of such constructions supports the view that the semantic restrictions prohibiting their formation need not be accounted for in linguistic semantics (cf. Coseriu 1967). By contrast, such dubious constructions as The girl with tousled clothes or The cactus passed away are imaginable either as willfully deviating utterances of native speakers or as utterances of non-native speakers who are unaware of the syntagmatic restrictions of the verbs tousle and pass away. Such restrictions pertain to language-specific semantics, i.e. they are semantic properties of the words of an individual language.

Contrary to the currently prevailing preoccupation with universal linguistic constraints, we would like to claim that, with regard to collocational analysis, linguistics should confine itself mainly to the study of usage restrictions and language-specific semantic constraints; or taking a more positive view of the phenomena, we maintain that the linguistic description should be able to explicate the linguistic reasons for the native speaker's reactions towards cases where such syntagmatic constraints have not been strictly observed, have been willfully disregarded, or erroneously violated. In stratificational grammar, this can be achieved by defining semifunctional associative links among lexemes and sememes in the language system. It should, however, be pointed out that it often cannot unequivocally be decided which type of collo-

cational relations a given lexeme contracts with other words, and it will be shown that sometimes a lexeme collocationally connects to both a sememe and a lexeme.

4. COLLOCATIONS AND CURRENT STRATIFICATIONAL NOTATION

Since there is some evidence that collocations like idioms are retrieved from memory storage as unanalyzed wholes, one might argue that both phenomena should be described in an analogous fashion. In stratificational grammar, idioms such as hot potato and bone of contention have been explicated in the realizational portion of the language system (cf. Makkai 1972). They are composite realizations which potentially allow an erroneous decoding towards a literal interpretation, as exemplified in Figure 1. The cohesion and

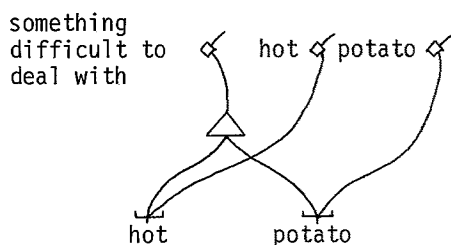


Figure 1: The analysis of an idiom

semantic fusion of idioms is accounted for by their unitary status in a stratum. A similar or equal approach to collocations is however beset with many difficulties. Collocations do not typically allow an erroneous decoding and their meaning is deducible from the senses of their parts. To ascribe the status of a unitary sememe or lexeme to the collocation

badly need as in I badly need some money is not only in conflict with the traditional use of the terms sememe and lexeme, but would, in effect, imply that linguistic analysis as it has been practised for over half a century has in an overwhelming number of cases been a useless effort. Incidentally, it may be interesting to note that while dictionaries of idioms normally also list constructions which would be better viewed as collocations, we found no collocations as separate entries in the new Longman Dictionary of English Idioms (1979). This may indicate that in lexicography the difference between idioms and collocations is now widely recognized and that such a distinction can fairly consistently be made in lexicographic practice. In contrast to idioms, collocations are semotactic and lexotactic constructions which as such do not differ from free constructions (cf. Müller 1980). The problem is where and how the linkage of collocating words can be explicated in the stratificational system.

In the terminology of process grammars, a kind of selection takes place between collocating words. For the description of selection, or rather, context-sensitive conditioning, stratificational grammar has used conditioning lines and enabler nodes. A conditioning line typically reaches from the tactics into the realizational portion of the same stratum and determines the choice among various options by means of an enabler node; this node singles out a marked variant below an ordered OR-node (cf. Lockwood 1972: 48-52). Figure 2 gives a simplified illustration of how these notational devices handle the choice of the plural allomorph

-en with the noun *ox*; here the symbol *Z* stands for the three normal, phonologically determined, plural endings. It might be argued

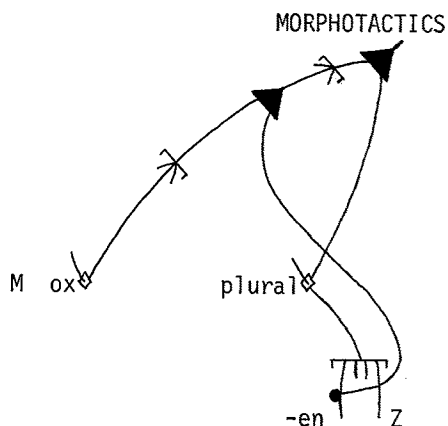


Figure 2: Context-sensitive conditioning

that conditioning lines and enablers are also applicable to collocations, and they have actually been applied to the description of semantic selection restrictions (Lockwood 1972: 167). But these notational devices prove inadequate for the purpose on various grounds.

First, the downward OR-node below which the enabler determines the choice expresses the fact that the options are synonymous and that the choice solely depends on contextual factors, i.e. it presupposes complete synonymy or absolute functional equivalence. It is, however, widely recognized that such properties are extremely rare in syntax and language-

specific semantics (e.g., Coseriu 1952/75: 79; Chafe 1970: 58, 137; 1971; Bolinger 1977b). For stratificational grammar this will imply that downward OR-nodes do not frequently occur in the realizational portion of the lexemic and the sememic stratum. Since collocations are to be explicated in these strata, the rarity of downward OR-nodes makes the application of the devices to collocations appear to be controversial.

Second, the conditioning lines along with the enabler nodes are appropriate for the description of unidirectional relations, i.e. unilateral dependences where one element determines or presupposes another, but not necessarily vice versa: the morpheme *ox* invariably determines the plural allomorph *-en*, but *-en* does not necessarily presuppose the morpheme *ox*, for it is also the plural suffix of the words *children* and *brethren*. The relations between collocating words, however, seem in principle to be bilateral dependences where one word predicts and syntagmatically implies the other and conversely: *juvenile* predicts *delinquency* and *delinquency* predicts *juvenile* although the predictive strength is probably greater in the first direction. Since a collocational relation should preferably be viewed as an interdependence or interrelation, a unidirectional descriptive approach can only partially capture its true nature.

Third, a collocational description using such devices will prove to be too rigid, not unlike the rules by which transformational grammar has formalized selectional restrictions; while the plural of *ox* always has to be *oxen*, collocational restrictions permit certain violations in all styles of speech and are frequently disregarded in poetic diction.

Finally, the notational devices are typically used for cases

where a tactical property of a linguistic element conditions a choice in the realizational portion. By contrast, collocational relations appear to obtain solely within the realizational portion of the language system. Here they complement such paradigmatic sense relations as synonymy, hyponymy, antonymy, and along with these constitute the structure of lexical fields (cf. Lyons 1977: 268). Both the paradigmatic and the syntagmatic relations among lexemes have a restrictive or constructive influence on the choice and concatenation of words in the actual use of language. Since collocational relations are only partially systematic and are more of an associational nature, they should not be described in the same manner as paradigmatic sense relations; nor can they be adequately expressed by conditioning lines and enabler nodes for the reasons given above.

5. ASSOCIATIVE LINES

In the realizational portion of the language system, the relationships are in a vertical dimension; on activation of the network, impulses either run downward, encoding meaning into sound, or upward, decoding meaning from sound. In order to incorporate collocational interdependences, the vertical relations could be supplemented by horizontal relationships as shown in Figure 3; it defines the interrelation within an abstract collocation AB.

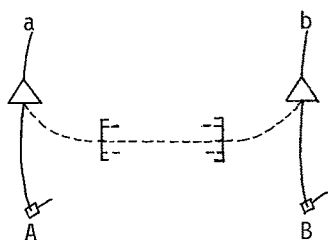


Figure 3: An abstract collocation AB

The broken line expresses a linguistically based mutual expectancy which holds supraindividually and interdialectally between the items A and B, while the OR-nodes take account of additional associative relations either item contracts with other elements in the syntagmatic dimension; associative lines are to be interpreted as positive implications of the respective elements, explicitly defining their collocational properties and only implicitly delimiting restrictions.

It is one of the main tasks of collocational analysis to explore the gradience within the collocational range of a word. Thus in a study of verb-intensifier collocations the phrase I badly triggered off the verb need in 65 per cent of the informants and the verb want in 28 per cent of the informants, leaving only a 7 per cent scatter of non-concurring informants (Greenberg 1970: 35, 62-67). To account for the relative frequency of principal collocates in the stratificational description, a new interpretive convention for OR-nodes will have to be agreed upon, due to the horizontal direction of the associative lines. While elsewhere in a precedence disjunction the left line is chosen prior to the right line, in a disjunction of associative lines the upper line may take precedence over the lower one. Figure 4 makes use of this convention, specifying the greater tightness of the collocation

(I) badly need in relation to (I) badly want 3). The diagram indirectly marks all other constructions with this degree adverb as non-habitual collocations; a deviation from the standard collocability as evidenced in 'We badly wished he would leave' is expressed by the absence of an associative line between badly and the verb wish.

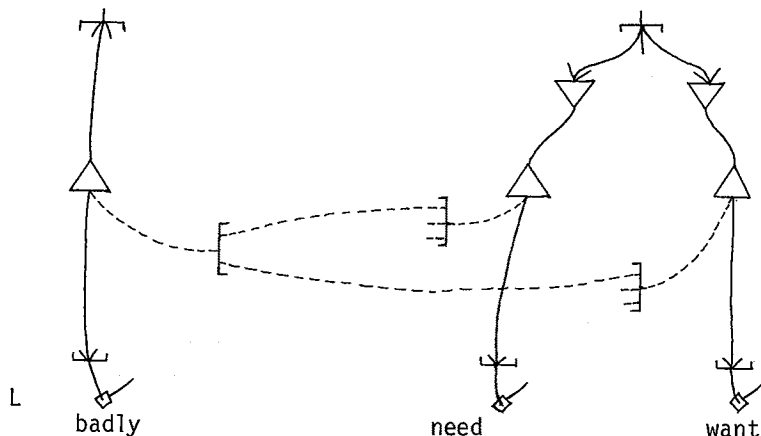


Figure 4: The principal collocates of the intensifier badly

6. SOME PERFORMANCE IMPLICATIONS OF THE ANALYSIS

It has generally been claimed by stratificationists that the relational networks should be capable of simulating the production and reception of language. A current theory of network activation holds that in production the impulses do not simply run downward through the system, but that the network is activated by a spreading flow of excitation which moves both downward and upward between the concepts and their phonic realizations until the words are actually uttered by the speaker; the theory further provides for varying degrees of excitation in the nodes and lines, where the gradation depends on the activation they receive from their immediate connections (Dell and Reich 1977). If we not only assume a bidirectional flow in the vertical dimension, but hypothesize such a flow also in the horizontal dimension, some grammatical aspects of collocations might be elucidated.

In the light of this hypothesis and the proposed description, let us briefly consider how the phrase badly need may be processed in production and comprehension. Since in a sentence like I badly need some money the adverb is only an optional constituent, it is arguable that in its production the verb is processed prior to the adverb. Thus in the network represented by Figure 4 an impulse would run downward from a concept to the lexeme need; simultaneously, from the AND-node above this lexeme, a (perhaps) weaker impulse would travel through the associative line towards the AND-node above the lexeme badly and ultimately upward towards its concept. This lexeme, along with such expressions as very much, a

great deal and strongly, is activated just a bit later, or almost simultaneously, by an impulse coming down from their common concept. In the diagram, the connection to those synonymous adverbs is indicated by the downward OR-node. Of these expressions, however, badly is chosen, for through the associative line, the line leading to this adverb receives a reinforcing impulse which increases its excitation level above that of the others. Excitation seems to flow back and forth and downward and upward between the lexemes need and badly, their respective concepts and their phonic realizations until the collocation is uttered by the speaker.

Should the adverb badly be processed first, an impulse would travel horizontally via the upper associative line to the AND-node dominating the lexeme need. In the process, it would increase the excitation level of the line leading from need to the common concept of the nearly synonymous readings of need and want; simultaneously it would activate those semantic and stylistic elements of need which distinguish it from want. If such elements, indicated in the diagram by lines entering an upward AND-node, tally with the speaker's communicative intent, the lexeme need is chosen; otherwise the lower associative line of the ordered OR-node is activated and the secondary collocate want will be selected. This is how the model might simulate the collocationally determined choice among synonyms or quasi-synonyms.

In the decoding of the same collocation, the order of the processes is obvious enough: what is perceived first, is apt to be processed first. Thus of the collocation as a whole, the hearer will first set about decoding the adverb badly. But prior to receiving the signal need he will be faced with a potential ambiguity: from the lexeme badly an impulse not only runs to its intensifier meaning but to at least one other meaning which may be glossed as 'in a bad manner' - this ambiguity is indicated in the diagram by the upward OR-node above badly. But as soon as the signal need is received and decoded the ambiguity is resolved by an impulse that runs through the associative line: the line only leads to the intensifier meaning of badly and this meaning is decoded on account of its higher excitation level. The collocationally guided resolution of ambiguity could be thus simulated by the model.

Much of this is certainly rather speculative; but if the model is able to adequately simulate the processing of collocations in the proposed manner, this will lend some support to the hypothesis that there is not only a vertical bidirectional excitation flow in speech production (as postulated by G.S. Dell and P.A. Reich), but that in production and comprehension excitation spreads through the network both in a vertical and in a horizontal dimension. All of these assumptions call for further exploration and ultimate verification by psycholinguistic experiments and neurophysiological research.

7. THE DESCRIPTION OF OTHER COLLOCATIONAL PHENOMENA

The relationship between badly and need or want seems to be collocational in the strictest sense; more often, however, colloca-

tional properties may be generalized in terms of semantic components. Thus the intensifier utterly, under normal circumstances, only modifies 'negative' verbs such as detest and disapprove, and the intensifier greatly normally modifies 'positive' verbs like admire and enjoy, while the verb damage usually collocates with inanimate objects. In the stratificational description of such constraints, an associative line may lead from an AND-node above the lexeme sideways and upward to a semantic element which is the common paradigmatic component of the lexeme's collocates and its own syntagmatic associative component. Whenever the lexeme occurs in an environment that agrees with its collocational property, the semantic component in question seems to get reinforced by an impulse which runs through the associative line.

Such cases should be distinguished from collocational properties of words like neigh, strum, or bandy as in bandy-legged. It seems that the meanings of these words can only be defined sufficiently if the concepts 'horse', 'stringed instrument' and 'leg' respectively are mentioned, i.e. their collocational properties are part of their own paradigmatic component. In a stratificational description of constructions with such words, solid lines and associative lines will form closed loops in the network, exhibiting the semantic redundancy of such collocations and at the same time reflecting the close interrelationship between paradigmatic and syntagmatic semantics.

Among transformationalists, semantic collocational links have been construed as syntactic properties and used for a kind of blocking mechanism in syntactic derivation. If there is any justification for such an approach, the American novelist Frederic Morton could never have written of a man that "like Hemingway, he was permanently damaged and therefore permanently inspired by war" (Webster's New Dictionary of Synonyms, 1973: 446). A stratificational description, however, is capable of revealing at least the origins of the stylistic effect produced by this utterance; it can specify the componential clash by means of a solid line which leads from the pronoun he to the paradigmatic component MALE and by a broken line which leads from the verb damage to its syntagmatic component INANIMATE: within the componential hierarchy, the two components are descriptively identified as standing in a disjunctive relationship.

In collocational analysis, cases are sometimes encountered where a semantically generalizable collocational property of a lexeme does not refer to all the words belonging to that semantic category. Thus the intensifier deeply collocates with a fairly homogeneous group of emotive verbs such as hate, dislike, admire, love; but though belonging to the same semantic group, the verb like is not a collocate of deeply; instead of * (I) deeply like, the habitual collocation (I) very much like is used (cf. Greenbaum 1970: 83). This slightly more complex situation also poses no problem for the description if we allow associative lines to enter two AND-nodes above a lexeme on different strata; in the case of the verb like, the lower associative line connecting to the complex intensifier very much 'rectifies' the associative impulse

which runs from its semantic component EMOTION to the unacceptable intensifier deeply.

In addition to such mixed cases, it should be pointed out that the proposed analysis can also account for collocational properties which concern the position of lexemes. A positional norm of the intensifier much is, for instance, disregarded in the unacceptable utterance* Some people prefer wine much (cf. Greenbaum 1970: 12; 1974: 82). Whereas in the above formalization associative lines have been connected to solid lines by means of unordered AND-nodes, positional collocational norms may simply be described by ordered AND-nodes. In this particular case, ordered AND-nodes above much and prefer will ensure that the intensifier precedes the verb in at least those cases where the sentence is not affected by negation.

8. CONCLUSION

It will have been noted that in our stratificational description of collocations we have aimed at a compromise between a holistic and an atomistic approach to language: by means of associative lines, collocations are identified as pre-set complex units of language and are simultaneously analyzed into their component parts. Such a view of the phenomenon should, in our opinion, be upheld until experimental psychology and neurophysiological research are able to provide incontrovertible evidence that only a holistic approach which treats collocations in the same manner as (semantic) idioms is correct. While adhering to its analytical principles, stratificational grammar may, by means of the proposed notational device, well be able to meet the demands made by a non-reductionist view of collocations and a holistic view of language in general. If it expresses those linguistic facts by a relational description which other theories can at best only state as seemingly unsystematic and incoherent information in a lexicon, it remains true to its principle that linguistic totality consists of relationships (cf. Lamb 1966: 8).

Relational network descriptions which make use of solid and of broken associative lines may become the theoretical foundations of a new kind of lexicography. A. Makkai (1976; 1977) has repeatedly pointed out that a context-sensitized thesaurus of English is a desideratum in linguistics. Due to the immense storage capacity provided by modern electronics, such a dictionary, whose bulk of information could be stored on computer tape, seems no longer to be an unrealistic objective. A systematic treatment of the collocational range of each entry word would be one aspect of such a thesaurus distinguishing it from traditional dictionaries.

NOTES

- 1) While we are aware that no sharp distinction can be drawn between idioms and collocations, we would maintain the view that in linguistic description a distinction between the two phenomena should, nonetheless, be upheld due to the transparency and greater

syntactic freedom of collocations, just as collocations should be distinguished from free constructions on account of their different constraints and range of productivity (cf. Mitchell 1971; Müller 1980). Below, we are, in effect, arguing that collocations are stored and processed in a way which differentiates this group from the other two construction types.

2) Despite their many theoretically informative and partly innovative investigations into idiomaticity, Soviet linguists, also, seem to have given much less attention to the study of collocations and collocability (cf. Häusermann 1977).

3) For convenience of exposition and discussion, it may be assumed, as is done in the diagram, that badly is the main collocate of both need and want. Word-association tests have, however, shown that syntagmatic associations can be asymmetric and that the associative strength is generally greater in the direction which corresponds to the normal sequence in speech (cf. Clark 1970: 283; Miller and Johnson-Laird 1976: 248-49). Thus if need has been proven to be the primary collocate of (I) badly, this does not necessarily imply that badly is also the primary collocate of need. A simplification may here be allowed in the absence of evidence to the contrary.

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III

LANGUAGE IN PARTICULAR: SPECIFIC PROBLEMS

A METHOD FOR QUANTITATIVE ANALYSIS OF TEXT STRUCTURE

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1. Introduction.

A recognition of the fact that sentences do not normally appear in isolation has led many linguists in recent years to go beyond the study of syntactic structures within the sentence and focus their attention on forces that operate across the boundaries between sentences in a text. These forces, in their turn, are closely connected with certain aspects of the internal organization of the sentences, such as choice of theme, choice of pronoun or substitute form, deletion of constituents, etc. Inter- and intrasentential phenomena can consequently be profitably studied in combination.

Language possesses a number of text-forming devices. Text structure, as I use the term here, is the sum of those properties of a text that result from the writer's or speaker's realization of this text-forming potential. The term is used in spite of the fact that not all the text-forming devices give rise to structures of constituent type. The term texture has been used by Halliday & Hasan (1976:2) for the same phenomena. What I will suggest in this paper is a method for quantitative analysis of text structure, a method that will enable us to measure the extent to which a writer or speaker has made use of the different text-forming devices at his disposal.

Text structure, or texture, is the combined effect of cohesion between sentences and thematic structure and information structure within sentences (cf. Halliday & Hasan 1976:324-5). The information structure is marked chiefly by intonation in English, and since this paper is concerned only with written texts, I will limit the discussion to thematic structure and cohesion.

2. Thematic structure.

Besides its hierarchical syntactic structure, every clause has also a sequential thematic structure. The first constituent of the clause (with certain exceptions, such as co-ordinating conjunctions) is the theme of the clause; the remainder of the clause is its rheme. In the investigations described below I have not studied the thematic structure of subordinate clauses. Instead, these have been regarded merely as constituents of their main clauses, since they stand in a paradigmatic relationship to other, non-sentential, constituents, such as adverbials and noun phrase

modifiers. Borrowing a term from Enkvist 1974, I call a complex of main clause + subordinate clauses (if any) a macro-syntagm. A macro-syntagm can never contain more than one main clause. Consequently, a sentence that consists of several co-ordinated main clauses is broken up into as many macro-syntagms, as in example (1), taken from Hemingway's The Old Man and the Sea (/ = end of theme, // = end of macro-syntagm).

- (1) He / settled comfortably against the wood //
 and $\emptyset$ / took his suffering as it came //
 and the fish / swam steadily //
 and the boat / moved slowly through the dark water. //

In the second macro-syntagm of (1) the zero serves to mark the position of the deleted subject. Zero subjects of this type in initial position are regarded as themes in the present analysis; so are initial subordinate clauses, as in example (2), taken from Hemingway's To Have and Have Not.

- (2) Once it's dark / they're all right. //

3. Theme dynamics.

Enkvist (1974) described different ways in which macro-syntagms can be linked to each other by means of cohesion, according as each cohesive element appears in a theme or a rheme. He recognized four different link types, which can be illustrated as in figure 1, where T = theme and R = rheme. The terms are taken from Enkvist; my abbreviations are given in brackets.

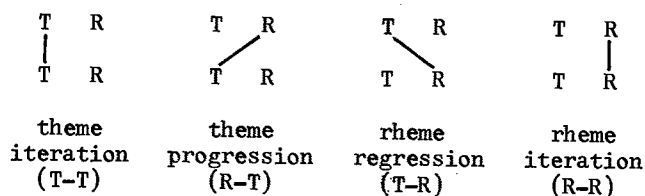


Figure 1. The four simple link types.

Examples (3) - (6) illustrate what these link types can look like in a text:

- (3) Fred / was at home. //
 ↑
 He / was reading a book. // (T-T)
- (4) Fred / was reading a book. //
 —————→
 It / was boring. // (R-T)

(5) The wall / was white. //

Somebody / had scribbled a few words on it. //

(T-R)

(6) I / looked at the wall. //

A few words / were scribbled on it.

(R-R)

The variation between these four link types in a text constitutes what Enkvist calls theme dynamics. Prolonged use of theme iteration can make a text very monotonous, since the theme never changes; prolonged use of theme progression, on the other hand, can result in a rambling text where a new theme appears in each successive macro-syntagm and we get further and further away from the original theme. In a normal text, however, we will find a mixture of all these link types.

My own investigations are based on Enkvist's concept of theme dynamics, but I have developed his analysis in certain important respects. First, Enkvist studied only the first anaphoric link from each macro-syntagm; I have registered all the cohesive links within a text, anaphoric as well as cataphoric.

Secondly, besides the "simple" link types described above, I₂ have found it necessary to recognize four "complex" link types, since certain pronouns (it, this, that) can refer anaphorically to whole macro-syntagms (this can also be used cataphorically). In the same way, so and not can substitute for whole macro-syntagms (Halliday & Hasan 1976:52-3, 68-70, 130-6). These link types are illustrated in figure 2; concrete examples are given in (7) - (10).

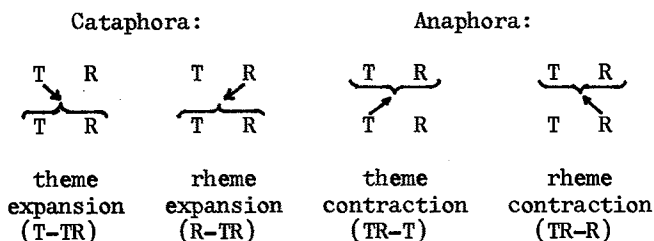


Figure 2. The four complex link types.

(7) This / is my main objection: //

we / can't afford a new car. //

(T-TR)

(8) Can / you believe this: //

John / has sold his car. //

(R-TR)

(9) John / sold his car. //

That / surprised me. //

(TR-T)

(10) John / has sold his car. //

I / can't believe it. //

(TR-R)

Thirdly, Enkvist did not account for the different cohesive relations that established his links; I have found it instructive to study thematic structure, and theme dynamics, in combination with cohesion.

4. Cohesion.

The different types of cohesive relation that can be found within a text have been discussed in great detail in Halliday & Hasan 1976. For the purposes of this paper their classification is, in fact, far too detailed, and my analysis has been carried out in terms of their five basic categories of cohesion: reference (R), substitution (S), ellipsis (E), conjunction (C), and lexical cohesion (L). In the results reported here, however, I have omitted conjunction and combined substitution and ellipsis into one category, substitutive/elliptical cohesion (S/E). Ellipsis is, in other words, regarded as substitution by zero. In table 3 below the category reference has been further divided into the subcategories pronominal reference (Rp), demonstrative reference (Rd), and comparative reference (Rc).

Pronominal reference can be established by the use of personal or possessive pronouns, as in (3) - (6) and (10). Demonstrative reference can be achieved by the use of demonstrative pronouns, as in (7) - (9), or by the use of the definite article, as in (11).

(11) I / bought an apple and a pear. //

Rd The apple / was red. //

Elliptical cohesion arises from the omission of an element, which has to be supplied from a previous macro-syntagm, as in (1) and (12). Substitutive cohesion can be achieved by the use of certain substitute forms, such as one, do, and so, instead of other elements, as in (13) and (14).

(12) I / bought two apples //

and Peter / $\emptyset$ two $\emptyset$. //

(13) I / have a red car //

and Peter / has a blue one. //

(14) It / is going to rain. //

I / don't think so. //

Lexical cohesion, finally, is illustrated in (11) - repetition of lexical item - and in (15) - collocation.

(15) The book / was boring. //

Fred / yawned. //

5. The analysis.

For the investigation reported here four text extracts of 50 macro-syntagms each were selected from novels by John Gardner and Ernest Hemingway.³ The theme of each macro-syntagm was identified. All the cohesive links within each text were identified and classified in terms of link type and cohesive relation type. The results are shown in tables 1 and 2.

	R		S/E		L		Total
SD	66	46.81%	6	4.26%	69	48.94%	141
NM	52	38.52%	5	3.70%	78	57.78%	135
OMS	63	45.99%	8	5.84%	66	48.18%	137
HHN	66	56.90%	0	0.00%	50	43.10%	116

Table 1. Distribution of cohesive relation types.

	SD		NM		OMS		HHN	
T-T	20	14.18%	12	8.89%	19	13.87%	20	17.24%
T-R	19	13.48%	10	7.41%	24	17.52%	9	7.76%
R-T	32	22.70%	44	32.59%	29	21.17%	26	22.41%
R-R	64	45.39%	68	50.37%	65	47.45%	61	52.59%
T-TR	5	3.55%	0	0.00%	0	0.00%	0	0.00%
TR-T	1	0.71%	1	0.74%	0	0.00%	0	0.00%
	141		135		137		116	

Table 2. Distribution of link types.

The total number of cohesive links in the four text extracts is fairly even, HHN alone having a somewhat lower figure than the others. The distribution of cohesive relation types (table 1) varies between the extracts: there is a very strong similarity between SD and OMS, whereas HHN differs from the rest in that R is the largest category. S/E is the smallest category in all the extracts; again, HHN differs from the others in that this category is not represented at all. A comparison between the three subcategories of R (table 3) shows the same pattern in all the extracts: Rp is by far the largest subcategory, and Rc the smallest.

	Rp		Rd		Rc		Total
SD	48	72.73%	14	21.21%	4	6.06%	66
NM	38	73.08%	12	23.08%	2	3.85%	52
OMS	44	69.84%	18	28.57%	1	1.59%	63
HHN	59	89.39%	5	7.58%	2	3.03%	66

Table 3. Distribution of subcategories of R.

The pattern is less clear when we look at the distribution of link types (theme dynamics), but two points should be noted: rheme iteration is by far the largest category in all the extracts, and again there is a strong similarity between SD and OMS. The only real difference between them is the absence of complex links in OMS.

6. "Ideal" theme dynamics.

After investigating a great number of texts I have found that rheme iteration is always the most frequent link type in ordinary prose. But this is not really surprising: rhemes are normally a good deal longer than themes, which means that the chances are much greater that we should find cohesive links between rhemes than between themes. Likewise, if one text has very short themes and very long rhemes, we should expect to find a greater disproportion between theme iteration and rheme iteration than if themes and rhemes were of equal length. In table 4, $\bar{t}$ and $\bar{r}$ denote the average number of words in theme and rheme. There is a striking similarity between the percentages for $\bar{t}$ and $\bar{r}$ in all the extracts.

One way of evaluating the theme dynamics of a text is by comparing it to the "ideal" theme dynamics that would result if all the cohesive elements were evenly distributed over the text. In

	t		r		s = t + r
SD	3.64	20.22%	14.36	79.78%	18.00
NM	4.40	19.23%	18.48	80.77%	22.88
QMS	2.00	19.49%	8.26	80.51%	10.26
HHN	2.24	25.81%	6.44	74.19%	8.68

Table 4. Average length of theme and rheme.

order to see how the "ideal" theme dynamics values are calculated, let us imagine the extreme situation when every word in a text is cohesively linked, anaphorically as well as cataphorically, to every other word in the text, except those in the same macro-syntagm. The total NUMBER of links will be absurdly high, but the PROPORTIONS will be the same as if the links were fewer but still evenly distributed.

Figure 3 shows a text of this type. $\underline{t}$ and $\underline{r}$ denote the average number of words in theme and rheme, respectively. $\underline{n}$ is the number of macro-syntagms in the text.

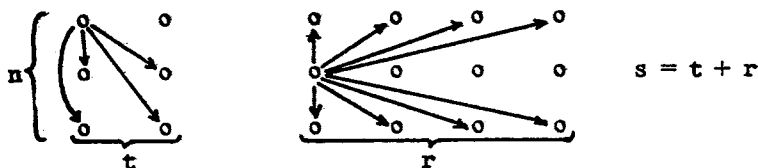


Figure 3. Maximal cohesion (examples).

From each word in a theme, there are $\underline{t}$ links to every other theme, and there are $\underline{n} - 1$ other themes in the text, thus the number of T-T links from each word is $\underline{t}(\underline{n} - 1)$. The total number of words in the themes is $\underline{t}\underline{n}$. Thus the total number of T-T links in the text is

$$\text{T-T: } \underline{t}(\underline{n} - 1) \times \underline{t}\underline{n} = \underline{t}^2(\underline{n}^2 - \underline{n})$$

In the same way we get

$$\text{T-R: } \underline{r}(\underline{n} - 1) \times \underline{t}\underline{n} = \underline{t}\underline{r}(\underline{n}^2 - \underline{n})$$

$$\text{R-T: } \underline{t}(\underline{n} - 1) \times \underline{r}\underline{n} = \underline{t}\underline{r}(\underline{n}^2 - \underline{n}) \quad \text{R-R: } \underline{r}(\underline{n} - 1) \times \underline{r}\underline{n} = \underline{r}^2(\underline{n}^2 - \underline{n})$$

In a text with only simple links, the total number of links, $\underline{z}$, will be

$$\begin{aligned} \underline{z} &= \underline{t}^2(\underline{n}^2 - \underline{n}) + \underline{t}\underline{r}(\underline{n}^2 - \underline{n}) + \underline{t}\underline{r}(\underline{n}^2 - \underline{n}) + \underline{r}^2(\underline{n}^2 - \underline{n}) = \\ &= (\underline{t}^2 + 2\underline{t}\underline{r} + \underline{r}^2)(\underline{n}^2 - \underline{n}) = (\underline{t} + \underline{r})^2 (\underline{n}^2 - \underline{n}) = \underline{s}^2(\underline{n}^2 - \underline{n}) \end{aligned}$$

The percentages for the different link types will be

$$\%T-T(z) = \frac{100 t^2(n^2 - n)}{s^2(n^2 - n)} = \frac{100t^2}{s^2} \quad \%R-R(z) = \frac{100 r^2(n^2 - n)}{s^2(n^2 - n)} = \frac{100r^2}{s^2}$$

$$\%T-R(z) = \%R-T(z) = \frac{100 tr(n^2 - n)}{s^2(n^2 - n)} = \frac{100tr}{s^2}$$

In a text with complex links as well, there will be $n - 1$ complex links from each word in the themes. But one half of these will be cataphoric, T-TR, and the other half anaphoric, TR-T. The same thing applies to R-TR and TR-R. Thus we get

$$T-TR = TR-T = \frac{t \cdot n \cdot (n - 1)}{2} = \frac{t(n^2 - n)}{2}$$

$$R-TR = TR-R = \frac{r \cdot n \cdot (n - 1)}{2} = \frac{r(n^2 - n)}{2}$$

The total number of links in this case, Z, will be

$$Z = s^2(n^2 - n) + 2 \frac{t(n^2 - n)}{2} + 2 \frac{r(n^2 - n)}{2} = s^2(n^2 - n) + t(n^2 - n) + r(n^2 - n) = (s^2 + t + r)(n^2 - n) = (s^2 + s)(n^2 - n)$$

The percentages will in this case be

$$\%T-T(Z) = \frac{100t^2}{s^2 + s} \quad \%R-R(Z) = \frac{100r^2}{s^2 + s} \quad \%T-R(Z) = \%R-T(Z) = \frac{100tr}{s^2 + s}$$

$$\%T-TR(Z) = \%TR-T(Z) = \frac{100 \frac{t(n^2 - n)}{2}}{(s^2 + s)(n^2 - n)} = \frac{100t}{2(s^2 + s)}$$

$$\%R-TR(Z) = \%TR-R(Z) = \frac{100 \frac{r(n^2 - n)}{2}}{(s^2 + s)(n^2 - n)} = \frac{100r}{2(s^2 + s)}$$

We are now able to compare the observed and "ideal" theme dynamics values for the four text extracts. This comparison is shown in table 5, where $\underline{o}$ and $\underline{i}$ denote observed and "ideal" values, respectively.

Investigation of a great number of texts has shown that the normal values for $\underline{o}/\underline{i}$ are $\underline{o}/\underline{i} > 1$ for T-T and R-T, $\underline{o}/\underline{i} < 1$ for T-R and R-T. In other words, theme iteration and theme progression are normally over-represented in comparison with the "ideal" distribution, whereas rheme regression and rheme iteration are normally under-represented. The complex link types are too infrequent to admit of any generalizations. As table 5 shows, the four texts all follow the normal pattern, except in one instance: T-R is slightly over-represented in HHN.

		T-T	T-R	R-T	R-R	T-TR	TR-T	R-TR TR-R
SD	o	14.18%	13.48%	22.70%	45.39%	3.55%	0.71%	0.00%
	i	3.87%	15.28%	15.28%	60.30%	0.53%	0.53%	2.10%
	o/i	3.664	0.882	1.486	0.753	6.698	1.340	0.000
NM	o	8.89%	7.41%	32.59%	50.37%	0.00%	0.74%	0.00%
	i	3.54%	14.88%	14.88%	62.50%	0.41%	0.41%	1.69%
	o/i	2.511	0.498	2.190	0.806	0.000	1.805	0.000
OMS	o	13.87%	17.52%	21.17%	47.45%	-	-	-
	i	3.80%	15.69%	15.69%	64.81%	-	-	-
	o/i	3.650	1.117	1.349	0.732	-	-	-
HHN	o	17.24%	7.76%	22.41%	52.59%	-	-	-
	i	6.66%	19.15%	19.15%	55.05%	-	-	-
	o/i	2.589	0.405	1.170	0.955	-	-	-

Table 5. Observed and "ideal" values for theme dynamics.

7. Cohesive density.

One property of texts that is worth looking at more closely is the density of cohesive links in the text. This is a property that can be defined in different ways. We can define it as links per macro-syntagm (l/ms); the values for the four text extracts are shown in the first column in table 6.

	l/ms	w/l
SD	2.82	6.38
NM	2.70	8.47
OMS	2.74	3.74
HHN	2.32	3.74

Table 6. Cohesive density.

In a great number of texts the number of links per macro-syntagm has been found to be relatively stable, the values typically found in the interval $1.9 < l/ms < 2.9$. This suggests that when there is an increase in the number of words (normally in the rheme), these do not include any new cohesive items, except possibly such as give rise to cohesion within the macro-syntagm,

which is not registered. Consequently, cohesive density measured in words per link, or frequency of occurrence of cohesive items, is much less stable, as can be seen from the second column in table 6. The variation here is typically in the interval $3 < w/l < 10$.

We can determine the cohesive density in theme and rheme separately by calculating the number of cohesive items per n words in theme and rheme, respectively. This is done by adding the occurrences of T-T, R-T, T-TR, and TR-T and dividing the sum ($l(T)$ in table 7) by t ; in the same way, $l(R)$ is the sum of the occurrences of T-R, R-R, R-TR, and TR-R, and this sum is divided by r .

	l(T)		l(R)		l(T)/t		l(R)/r	
SD	58	41.13%	83	58.87%	15.934	73.38%	5.780	26.62%
NM	57	42.22%	78	57.78%	12.955	75.43%	4.221	24.57%
OMS	48	35.04%	89	64.96%	24.000	69.02%	10.775	30.98%
HHN	46	39.66%	70	60.34%	20.536	65.39%	10.870	34.61%

Table 7. Cohesive density in theme and rheme.

Table 7 shows that although the greater number of cohesive items occur in the rhemes in all the texts, the cohesive density of the themes is usually much greater than the cohesive density of the rhemes. This again goes to show that the addition of words to a rheme normally only serves to "dilute" it from a cohesive point of view. The cohesive density of the themes is usually 2-3 times greater than that of the rhemes; in novels by Doris Lessing it has even been found to be more than four times greater.

8. Correspondence between link type and cohesion type.

One more question concerning text structure will be discussed here. So far, we have studied the distribution of link types in the whole text, and the distribution of cohesive relation types in the whole text. The question is, how are the cohesive relation types distributed among links of one type, say T-T; or conversely, how are the link types distributed among links established by one type of cohesive relation, say R? Furthermore, will the distribution be the same as in the text as a whole, or if not, will there be random variation, or can we discern a consistent pattern, such that one particular relation type is used to establish links of one type more often than links of another type?

Figure 4 shows us how we can find an answer to these questions. The number of referential T-T links (a) is $P1 = 100a/b\%$ of the number of all T-T links (b); the number of all referential links (c) is $P2 = 100c/d\%$ of all the links (d) in the text. If R is over-represented among the T-T links in comparison with the whole text, then $P1 > P2$ and $P1/P2 > 1$; if R is under-represented, then $P1 < P2$

	R	S/E	L	Total
T-T	a			b
T-R				
⋮				
Total	c			d

Figure 4. How to determine the correspondence between link type and cohesion type.

and $P1/P2 < 1$; if R occurs in the same proportion among the T-T links as in the whole text, then $P1 = P2$ and $P1/P2 = 1$. The value of $P1/P2$ is calculated in the following way:

$$\frac{P1}{P2} = \frac{\frac{100a}{b}}{\frac{100c}{d}} = \frac{a \times d}{b \times c}$$

The number of referential T-T links is $P3 = 100a/c\%$ of the total number of referential links; the number of all the T-T links is $P4 = 100b/d\%$ of the total number of links in the text. If T-T is over-represented among the referential links, then $P3 > P4$ and $P3/P4 > 1$; if T-T is under-represented, then $P3 < P4$ and $P3/P4 < 1$; if T-T occurs in the same proportion among the referential links as in the whole text, then $P3 = P4$ and $P3/P4 = 1$. The value of $P3/P4$ is calculated in the following way:

$$\frac{P3}{P4} = \frac{\frac{100a}{c}}{\frac{100b}{d}} = \frac{a \times d}{b \times c} \quad \text{Thus } \frac{P1}{P2} = \frac{P3}{P4}$$

The number of occurrences and the correspondence figures for the four text extracts are given in tables 8 - 11.

	Occurrences				Correspondence		
	R	S/E	L	Ttl	R	S/E	L
T-T	11	3	6	20	1.175	3.525	0.613
T-R	10	1	8	19	1.124	1.237	0.860
R-T	23	0	9	32	1.536	0.000	0.575
R-R	18	2	44	64	0.601	0.734	1.405
T-TR	3	0	2	5	1.282	0.000	0.817
TR-T	1	0	0	1	2.136	0.000	0.000
Total	66	6	69	141			

Table 8. Correspondence link type - cohesion type in SD.

	Occurrences				Correspondence		
	R	S/E	L	Ttl	R	S/E	L
T-T	7	2	3	12	1.514	4.500	0.433
T-R	5	0	5	10	1.298	0.000	0.865
R-T	26	2	16	44	1.534	1.227	0.629
R-R	13	1	54	68	0.496	0.397	1.374
TR-T	1	0	0	1	2.596	0.000	0.000
Total	52	5	78	135			

Table 9. Correspondence link type - cohesion type in NM.

	Occurrences				Correspondence		
	R	S/E	L	Ttl	R	S/E	L
T-T	13	3	3	19	1.488	2.704	0.328
T-R	12	1	11	24	1.087	0.714	0.951
R-T	20	0	9	29	1.500	0.000	0.644
R-R	18	4	43	65	0.602	1.054	1.373
Total	63	8	66	137			

Table 10. Correspondence link type - cohesion type in OMS.

	Occurrences				Correspondence		
	R	S/E	L	Ttl	R	S/E	L
T-T	19	0	1	20	1.670	0.000	0.116
T-R	7	0	2	9	1.367	0.000	0.516
R-T	21	0	5	26	1.420	0.000	0.446
R-R	19	0	42	61	0.547	0.000	1.597
Total	66	0	50	116			

Table 11. Correspondence link type - cohesion type in HHN.

After a study of a great number of texts I have found a consistent pattern in the correspondence figures. S/E and the complex links do not occur frequently enough to admit of any generalizations, but for the other categories the correspondence figures are typically such as shown in table 12. If we compare with the figures in tables 8 - 11, we find that the four text extracts follow the typical pattern exactly. In other words, lexical cohesion is over-represented among the R-R links,

whereas referential cohesion is over-represented among the other simple link types.

	R	S/E	L
T-T	$x > 1$	-	$0 < x < 1$
T-R	$x > 1$	-	$0 < x < 1$
R-T	$x > 1$	-	$0 < x < 1$
R-R	$0 < x < 1$	-	$x > 1$

Table 12. Typical correspondence link type - cohesion type.

9. Conclusion.

In this paper I have shown a few ways in which a quantitative analysis of text structure can be carried out. When we apply these methods to various texts, we discover certain features that are typical of the organization of prose texts:

The cohesive density, measured in links per macro-syntagm, is relatively stable;

The cohesive density in the theme is much higher than the cohesive density in the rheme;

The percentage of T-T and R-T links is higher, and the percentage of T-R and R-R links lower than could be expected from the number of words in theme and rheme;

Lexical cohesion is over-represented among the R-R links, and referential cohesion among the other simple link types.

These features remain the same among all kinds of text categories; they have been found in newspaper texts, in detective stories, in novels by Gardner, Hemingway, Lessing and Drabble, in children's books and in speeches by lawyers and Members of Parliament, as well as in other text types.

When I started these investigations, I hoped to discover features that were characteristic of specific authors, text types, or literary genres. Instead, I have found a number of features inherent in any ordinary, well-written prose text. There are, of course, texts that deviate in one way or another from the typical patterns. But if we apply the methods described here, we will be able to state not only that the texts are deviant, but also in what respect and to what extent they deviate from what is typical, which will help to enhance our description of different texts.

NOTES

- ¹This definition of theme agrees with Halliday 1967 and Quirk et al. 1972. Other definitions of this term can be found, for example in Firbas 1964 and Enkvist 1974.
- ²It may even be necessary to recognize a ninth link type, TR-TR, in certain kinds of text. Since the status of this link type is still uncertain, however, it will not be further discussed here. The formulas for calculating "ideal" theme dynamics in section 6 can easily be extended to account for this link type as well.
- ³The extracts were taken from the following works:
 SD, a description of the Sunlight Man, a disturber of the peace in Batavia, New York, from John Gardner's The Sunlight Dialogues;
 NM, a description of Simon Bale, a Jehovah's Witness, and his reading habits, from John Gardner's Nickel Mountain;
 OMS, a description of the moment when the great swordfish jumps and the Old Man sees him for the first time, from Ernest Hemingway's The Old Man and the Sea;
 HHN, an interior monologue in which Harry Morgan considers the risks of carrying a group of Cuban revolutionaries across to Cuba, from Ernest Hemingway's To Have and Have Not.
 All the extracts, except OMS, are taken from the beginning of a chapter.

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THE MISSING LINK
IN THE INTERRELATIONSHIP OF SENTENCES

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The linear arrangement of elements in the text is by far more complex than the linear arrangement of elements in the sentence. The greater part of that complexity is due first to the larger number of text elements - including some lingering uncertainty as to which linguistic structures qualify as text constituents and which do not - and second to the correspondingly larger number of possible basic combinations of these text constituents.

Nobody will, and rightfully can, have any doubts as to the succession of sentences in a text being as much non-arbitrary as the succession of constituents in a sentence.

A linguistic element qualifies for text constituent status on the strength of its functional relationship to another element, or to sets of other elements, either preceding or following in the text. The relationship is phonological, grammatical, and lexical. If the phonological or grammatical links are missing, the utterance is faulty at best and unintelligible at worst. If the lexical link is missing - or the essential lexical link, if there are more links than one - the utterance is likely to be in need of supplementation, because it might either be misleading or ambiguous, or plainly non-communicative.

A text where all constituents are exhaustively identified by lexical interrelations is virtually impossible. The listener or reader will always be exposed in a varying degree to the need of 'thoughtful supplementation' of what he hears or reads. What the author can legitimately expect to be easily interpreted by the audience will fulfill its communicative function even though it may be lexically unrelated or just minimally related. Otherwise the text is in danger of getting cumbersome by a needless elaboration on the obvious. Quite understandably, though, the margin of error as to what is plain obvious and what demands further elaboration is, in view of the different types of audiences and the different make-up of individual audiences, very considerable.

There is, however, hardly any text of substance that does not present some problems of understanding to even highly sophisticated readers because of the isolated occurrence of lexical elements. The normal situation for almost any speaker with almost any larger audience is, not surprisingly, that he has to grapple in-

cessantly with the danger of overburdening or underfeeding at least some members of his audience. In either case the obvious reason is tied to the question of lexical relatedness of the key text constituents. Too much, and too repetitive, relatedness is an insult to the intelligence of the listeners or readers, too little, and too unengaging, relatedness leaves them stranded, as they cannot safely identify the communicative intent of the author. Whether or not a particular linguistic item is lexically related to the preceding or succeeding text portion is not just a question of establishing, or not establishing, text structure, but it is also a crucial criterion for establishing, or not establishing, the purported extent of communication.

The effect of a text on known audiences is largely pre-plannable and does not come about by magic. The successful author cannot afford to leave many things to chance, even though he may with benefit rely heavily on his intuition. Where the text producing author cannot - or does not want to - gain conscious control of the text construction process, the text analyzing linguist can - and has to - make a conscious effort of reconstructing this process with the objective of identifying lexical linkages, checking into their descriptive adequacy, explaining their function, and proposing potential improvements in the communicative force of the text by improved lexical interrelations.

Among the many possibilities of lexical linkage between linguistic items we intend to focus in this paper on relationships in which the second link, or the most essential link in case of more than one explanatory link occurring, is conspicuously absent. The missing link may owe its non-existence (I) to a special design on the part of the author to produce a desired result, or (II) its absence may be unintentional and give rise to wild conjectures on the part of the audience, or it may still have an unplanned, but actually foreseeable positive effect on those confronted with it.

We intend to discuss in some detail the major implications of either case.

I.

The absence of lexical linkage is purposeful

The one-time, unrelated occurrence of a lexical item in a text will rarely suffice to convey functional meaning. Mere repetition might already entail sufficient lexical linkage, since the repeated lexical structure will normally appear in a different sentence context. But such instances should be rare.

Hence, a one-time occurrence of an unrelated lexical item including mere repetition will mostly be equivalent to the ab-

sence of lexical linkage.

1. Lexical linkage is absent because elaboration is deemed unnecessary.

The number of lexical items used in a text that fall into this category is surprisingly large. In the following sentence

Next Memorial Day Weekend we plan to stay at home

the lexical element 'Memorial Day Weekend' does not require further lexical elaboration. Our general conversations and even our scientific discussions do rely on a large portion of shared experience and of widely accepted notions. Hence, a large portion of introduced lexical items need not be lexically linked to other lexical items via linguistic means. Even if additional lexical information concerning those particular items is gratuitously supplied, the larger portion of it will be repetitive rather than informative. Truly new information on a particular lexical item will, incidently, always be in the minority. Comprehensive understanding of a subjectmatter almost without exception requires that the amount of familiar information be vastly larger than the amount of unfamiliar information, i.e. of information newly introduced.

2. Lexical linkage is omitted because of a special challenge to be presented to the audience.

The author may want to whet the appetite of his clientele and provide an instigation for them to embark on an exploration of the semantic space all on their own. In many instances such a strategy might be the only way out for the author to overcome too diverse a background in pertinent information among the members of his audience or to bridge the gap between the expected amount of previous information and the actual extent of the information background encountered.

An extreme case fitting this category is well illustrated by the story contained in a poem by the German poet Gottfried August Bürger:¹ A dying wine-grower challenges his lazy and quarrelsome sons with the rather puzzling statement: "In unserm Weinberg liegt ein Schatz. Grabt nur danach!" Even though the youngsters eagerly and repeatedly ask for further information, they do not get any. After the old man's death the sons, now exhibiting an unprecedented zeal and unity of purpose, leave no stone unturned in the vineyard. No treasure is found, however, and their chagrined disappointment is almost limitless, until they realize next year that the threefold grape yield they can harvest is due to their unprecedented digging effort, for which, indeed, they needed the proper incentive.

Given the right circumstances, missing links may have therapeutic effects!

3. Lexical linkage is omitted because it cannot be supplied; it is not expressible.

Even the greatest master of words has to leave things unsaid, because they escape expression. For most of us it is true to say that thoughts and feelings are encountered that are more comprehensive than the words within our reach to express them. We would not know of what cannot be said unless we could at least partially say it. Translated into our missing-link terminology we could say: There are lexical items appearing in texts that are not exhaustively related to other lexical items, because they cannot be exhaustively related to other lexical items. The missing links thus occurring can be replaced by us as authors, or by us as audience, only in that we supplement what is expressed with our own inexpressible thoughts and feelings. The discussion is led, as it were, to the very limit of verbal expression and is left there for the imagination to take over. Neither is the author's intent nor the audience's perception of it fully verifiable, but although intent and its perception are never likely to completely coincide, the existing primary link should make them fairly comparable. In spite of the apparent possibility of a wide margin of error, it seems futile to deny that feelings and thoughts are experienced which do not lend themselves to verbal expression. As cases in point I refer to utter pain in tragedy or extreme joy in a state of blissfulness.

4. Lexical linkage may be omitted for reasons of legitimate or unwarranted secrecy.

As long as the primary lexical link in a situation of secrecy is withheld, the secret is safe from discovery, since there is no issue raised. With the primary link being made available, the need arises for further information, and the search for clues is on. The findings of those who pry may very well be more devastating than the truth so eagerly concealed. One has not got the answer yet once a question can be asked, but the range of possibilities where to look for a plausible answer has surely been reduced to a manageable scope. An avid, and capable, journalist, if supplied with the initial lexical item and denied the essential explanatory lexical ramifications which he feels are likely to make the whole complex a **sensational** news item, is bound to uncover by mere tenaciousness and systematicity a missing link that fits the mold, although he may not have the facts at his disposal to determine its truth value. Dangerous as the outlined procedure of such 'investigative reporting' may be, since in the end something might be proclaimed prematurely as 'the final truth' what may at best deserve to be called an approximation of it, the procedure, born of professional necessity, has its obvious merits, and it is not substantially different from the attitude of the scientific researcher progressing from the known to the unknown.

5. Lexical linkage is omitted due to absence of general knowledge. The uncovering of missing links establishes a discovering procedure for expanding the field of knowledge.

In theorizing we generally have to work with hypotheses, that is we extend the firm ground of verified facts by adding on assumptions within the range of presumed possibilities compatible with the initial facts.

The missing-link constellation does offer a very powerful tool for transferring hypotheses into plausible theories. The initial link, scarce as its information value may be at the outset, could serve as a testing frame for predicable arguments. An accumulation of all known arguments that can be predicated to the initial link would be the stepping stone for finding arguments so far not known that could be meaningfully related to the initial lexical item.

The prospect of such a discovery procedure to be successful would be the greater, the larger the number of relatable base links for which the appropriate missing links are to be established.

6. Lexical linkage is omitted by an individual author, because he lacks the appropriate knowledge and does not desire to acquire it.

Texts carelessly and superficially constructed may contain a large number of base links where the second links are omitted for lack of knowledge and/or indifference as to where the missing links, were they uncovered, might lead. Casual talk, sometimes adequately described as talking for the sake of talking, may very often fit into this category. However, texts with an abundance of lexical items leading nowhere - due to an abundance of missing links - can hardly bring about communication.

There may be uses for such a text type, based seemingly on the assumption that everything is better than silence, but the range of purposeful application ought to be rather limited, even though the frequency of its occurrence might very well be quite enormous.

7. Lexical linkage is omitted so as to avoid substantiation of items introduced in the base links.

Demagogues as well as irresponsible political campaigners, but occasionally also a scientist with little or no conscientiousness, may in varying degree take recourse to the deliberate use of base links without follow-ups, in order to impress their audience with the glariness of imprecise or even nebulous terms.

Half-lies or half-truths are constituted not so much by what is stated as by what is left out. Indistinctness and foginess, but also the primary objective of such texts - to produce the alluring luster of the grandiose term - would speedily be dissipated by supplying the omitted adequate lexical linkage. This, of course, would run counter to the intentions of the skillful designer.

Most slogans are void of lexical substantiations. They are harmless if taken as conduits to constructive thought, but they are potentially disastrous if they are taken as final products of thought or suggestively linked to destructive thought.

In a dialogue the potential harmfulness could easily be exposed by questions aimed at forcing the speaker to supply lexical substantiation, i.e. furnish the deliberately omitted missing lexical links. Mostly, however, the audience of the devious demagogue, the abusive political orator and, hopefully very rarely, the writing or lecturing scientist, is held captive by pleasing rhetoric.

Undue advantage is often taken of the unidirectional flow of speech dictated by the lecture hall situation where immediate responses and inquiries for clarification are normally ruled out. A question-and-answer period following a public lecture is very often a reliable means to either confirm the speaker as a rational and thorough thinker or to expose him or her as a superb manipulator of hollow words.

8. Lexical linkage is omitted, and misrepresentation effected, by oversupply of positive features in persuasion, of negative features in dissuasion.

Presenting an argument objectively would entail giving equal prominence to positive and negative aspects. Any type of persuasion or dissuasion derives its success from overemphasizing the positive and deemphasizing the negative aspects, or vice versa. The lexical linkage will be accordingly unbalanced. Hence, both persuasion and dissuasion are tied to the deliberate use of missing links.

Persuasion and dissuasion imply deviation from objectivity, but not necessarily falsification. Advertising may develop practices where links conveying facts are left out and are replaced by links conveying semi-facts or outright falsehoods. The inaccuracies or even lies, although clearly identifiable by the knowledgeable because of their improper lexical linkage, are expertly hidden in a glamorous context. That is to say, a flood of pleasant-sounding, but otherwise unessential information is provided, successfully distracting the uncritical customer from the omitted information.

9. Lexical linkage is omitted because of pertinent information supplied by the speech situation.

Grammatical proforms ordinarily require a lexical referent within the text, either in a preceding or a succeeding portion. The referent may be omitted in the appropriate speech situation where deictic elements, instead of lexical base links, fulfill the function of lexical representation. Examples for the three main types of deictic elements, temporal, pronominal, and local², would be:

- (a) Pronominal: Where did you find this?
- (b) Local: At the river. - Over there.
- (c) Temporal: When? - At Fred's birthday.

In colloquial speech two more types could be added on:

- (d) Nominal: The thing does not work.
 Das Zeug taugt nichts.
- (e) Verbal: Get going! - Ja mach doch!

In all five cases the missing lexical link is not supplied by the linguistic context but by the speech situation.

10. Lexical linkage is omitted at the sentence boundary.

Sentences, although by their linear arrangement self-contained entities with distinct lexical properties, discharge their meaning components into the text framework. Text meaning, like sentence meaning, is accumulated linearly, i.e. via the successive arrangement of meaningful elements. But once all elements are in place, text meaning, like sentence meaning, is simultaneously - and not successively - perceived.

The formal gap between sentences, signalled by phonological means, is meant to be overcome by interrelationships of linguistic elements in preceding and succeeding sentences. Under ideal conditions these gaps are, as it were, seamlessly smoothed over by the appropriate means of phonology, grammar, and lexicology. Nevertheless, gaps do occur, either by lack of skillfulness on the part of the language user or by special design. In the latter case, the speaker requires the listener to perform certain thought processes effecting lexical linkage which also could have been brought about by formal linguistic means. We overhear, e.g., someone saying:

Fred did not buy the car. He was short of money.

He could also have said:

Fred was short of money. Therefore he did not buy the car.

Apart from such simple examples of missing links to be supplied by the listener via inference, examples of extreme complexity could be cited. A demand, e.g., may be placed on the listener to draw conclusions from a large succession of sentences, conclusions that are essential precondition for understanding the succeeding sentence, as it firmly builds on the incorporation of these conclusions into the sentence argument:

The unexpected effect (of what has been enumerated in half a dozen of preceding sentences) was a movement which

The listener would be lost unless he is in the position to tie the conclusions drawn from the previous text portion into the chain of information continued with the succeeding sentence.

Supplying the missing link via inference is different from previously discussed argument supplementation imposed on the listener. In the case of inference, the choices are limited, and the chances of error are slight for the attentive and intelligent audience. Inference is, after all, not guesswork but thoughtwork along clearly definable lines.

That's why this type of lexical-link omission is a very essential instance of text construction. To a lesser degree - if at all - it is a question of economic considerations. But much more importantly, the requirement placed on the listener to reconstruct the missing grammatical plus lexical unit or units and to fulfill their functions via expanding and supplementing the information that is actually expressed by linguistic means, does undoubtedly stimulate the thought process and challenge the listener to become more actively involved in the speech process. The procedure has to be viewed within the context of what Wilhelm von Humboldt once defined as the possibility and necessity for intellectual man to do away with some strictures that grammar imposes on him. The curtailment of grammar is coupled with the advancement of the human intellect.³

II.

The absence of lexical linkage is unintentional

1. Missing links are due to lack of coordination between thought and expression.

Numerous people are that much accustomed to speak to themselves and for themselves that they cannot refrain from continuing to do so, even if they talk expressly to others and want to be understood. The vast difference between speaking to oneself and speaking to others rests principally on that in the first case unexpressed thoughts and expressed thoughts amalgamate and are available to the speaker with equal distinctness, whereas in the second case unexpressed thoughts, apart from obviously being lost in their entirety to the listener, also cause problems due to non-established lexical linkages to the thoughts expressed. That is to say, the listener has to grapple with unintentionally generated missing links. The difficulty is further compounded by the fact that the speaker can hardly ever have a precise knowledge of the general background of the listener. If this background is highly sophisticated, the listener may successfully reconstruct some of the missing links. In the absence of an adequate background on the part of the listener the text must appear to him as utterly incoherent.

The speaker may himself get a taste of how difficult it is to cope with such a situation. If he reads his text after six months, or after whatever time it takes for him to forget his framework of thoughts from which the text originated, his predicament will not be vastly different from that of his puzzled erstwhile listener.

2. Missing links due to mismatch of speaker and audience.

The expert can talk to the amateur and still be largely understood, provided he **constructs** his text with the understanding capacity of the amateur in mind. If he fails to bring about the required adaptation, the expert is bound to overwhelm the listener with terms for which the expert does not, but the listener does, require explanatory second links.

Such a mismatch can also occur with the roles reversed. A would-be specialist delivers a speech based on faulty or insufficient subjectmatter knowledge. His audience is well equipped to expect, and benefit from, a knowledgeable discussion of the topic at hand. What his listeners are exposed to, however, is disjoint speech, grammatically well-formed that is, but characterized by thought loopholes which manifest themselves for the listeners as missing lexical links.

3. Missing links due to general inferior text construction.

Many experts in a particular specialty may have a superb command of their subjectmatter area, but possess no or no sufficient experience in transmitting their superior knowledge to any type of audience. The impairment does not involve speech delivery skills, but speech production ability. That under these conditions no meaningful communication can come about, is not very likely to be due to deficiency in grammatical knowledge. The problem area, instead, is incoherent or at least inconsistent lexical interrelation.

Having acquired professional skills does not automatically produce good writing or good speaking habits.

4. Missing links due to faulty thinking.

Bad writing habits need not only stem from lack of practice. More aggravating, because less easily to be remedied, are causes that relate to the thought patterns of the writing individual. Thinking disjointly, by fits and starts, as it were, can hardly result in a continuous flow of neatly related lexical items in a text framework. "Gedankensprünge", i.e. skipping essential thoughts, will present the reader or listener with disorientation and confusion, since even a consistent thinking effort on his part will, as a rule, not undo the lack of consistent thought on the part of the speaker: A few missing links may render the entire text indigestible.

5. Missing links due to cultural gap.

Cultural differences between communicating parties may account for lack of understanding based on numerous missing links emerging where they are least expected. A very elaborate thought structure in an equally elaborate chain of well-linked lexical

items may still be perceived by readers with a significantly different cultural background as disjointly constructed and hence lacking in precision or even in clarity as to what the speaker wants to transmit and why.

A simple example would be the attempt of an English scholar to interpret to an audience in an Asian monsoon country a poem that deals with our Western concept of the four seasons of spring, summer, fall, and winter. The interpretation attempt, even though highly sophisticated according to our standards, might come across either as totally immaterial or as making no sense at all. For the presentation is interspersed with passages where essentially needed information is conspicuously absent, i.e. missing links are contained in the presentation. The speaker could not anticipate them to exist as long as he was ignorant of the prevailing cultural difference.

The Asian example may seem extreme. Actually, we do not have to travel as far as Asia to encounter a baffling experience of that kind. Vast cultural differences do also exist in our immediate environment, and many conflict situations that surface via verbal dispute may be reducible to acute cultural variance. Our everyday conversations should very well afford us with the opportunity of being confronted with 'cultural discrepancies' and teach us how to dissipate part of the resulting difficulty by searching for missing links in what we say and in what is said to us and undertake a common effort with our discussion partner to come up with the appropriate lexical links that can make the information gap disappear.

There are, of course, no less perplexing differences in the world view of people outside the cultural field in the narrow sense, e.g., in the political and religious spheres or in the realm of art and values. Differences of opinion are less harmful and hurting than are the misunderstood implications. Identification of the missing links involved and their removal by supplying pertinent information speedily should invite smiles for all concerned and keep away anger from everybody.

Even the complexities of disputes between nations have to be dealt with in words focussing on single concepts. These concepts are introduced into the discussion, expanded and related to other concepts via lexical units which we call - since they almost invariably occur in relationships to other lexical units - lexical links. The large or small issues that trouble nations as well as individuals have one important thing in common: they cannot be tackled by means other than lexical units. Inappropriate, insufficient, and outright faulty linkages are cogent manifestations of existing problems. And again: their removal and replacement by more suitable units, i.e. the identification of the missing links, and their incorporation into the text, is the first and crucial step towards effecting an improvement of the situation.

In some cases just a small number of lexical units may have to be exchanged or newly supplied, in other cases several thousands may be involved. The difference in the procedure of reme-

dying the omission is one of degree only.

6. Missing links due to disproportionate elaboration of primary concerns and their secondary illustration: An abundance of explanatory lexical links tied to secondary matters and an abundance of missing links where lexical units should be tied to primary matters.

Where mastery of style becomes an end in itself, the subject-matter for which the style should perform an ancillary function is bound to suffer serious curtailment.

The beauty of an embellished style, and the accuracy and comprehensiveness of subjectmatter presentation can well coexist with each other, provided that common sense ground rules are closely observed.

According to William D. Whitney these rules are not observed by Friedrich Max Müller, the German-born Oxford don who was widely recognized as the most famous English linguist all through the second half of the 19th century. Whitney's harsh attack is preceded by lavish praise for Müller's stylistic accomplishments:⁴

The illustrations ... are admirably chosen, acutely worked out, and ingeniously applied; they are full of suggestiveness; better we have nowhere seen.

The tone of the evaluation changes drastically when Whitney examines what role Müller's style plays in his voluminous writings:⁵

In thus praising them (the illustrations), we have at the same time indicated what seems to us their fault. They are too prominent and engrossing; they often seem introduced more for their own sake than on account of what they should illustrate ... sometimes, when we are looking for argument or exposition, our author runs off into his studies among words, in which we follow him with pleased attention, yet with the feeling that we are balked of what we had a right to expect.

Whitney's ensuing verdict may not do full justice to Müller's many achievements, but it conveys a truly accurate impression of what is amiss with the writer and his text,⁶ when the proper lexical links are missing, are not 'in place':

He is inconsequent ... he tarries in the vague, and loves a degree of imaginative dimness better than the full light of practical reality; logical connexion of thought, closeness of method, and cogency of arguments are not the distinguishing characteristics of his works.

Lexical interrelation is far from being random. Although it is largely free, the freedom of choice enjoyed by the author is severely restricted by the properties of the subjectmatter. Misrepresentation or incomplete representation occurs if and when essential lexical links are missing.

To conclude: In the interrelation of sentences grammar is, of course, heavily involved. But much more important, and much more complex, is the involvement of the lexical component. Over and above the indispensable grammatical correctness, it is the appropriate linkage of lexical elements that makes or breaks the text.

Missing links in some sense are unavoidable. A writer or speaker cannot be truly comprehensive, since total comprehensiveness would be impossible, and impractical.

But in another sense missing links are quite intolerable, as they do jeopardize communication. Hence the need for us to increase our awareness of what is conducive to keeping in a text the chain of lexical linkage intact and free from avoidable missing links.

FOOTNOTES

¹Cf. Gottfried August Bürgers Gedichte, ed. Arnold E. Berger. Leipzig (1891), pp. 231-32: "Die Schatzgräber".

²Cf. Dieter Wunderlich, "Pragmatik, Sprechsituation, Deixis," Lili 1/2 (1971) 153-90. - Examples & items (d)-(e) are mine.

³Cf. Wilhelm von Humboldt, Über die Verschiedenheit des menschlichen Sprachbaues. Berlin 1836, p. CCXCIX: "Je gereifter sich der Geist fühlt, desto kühner wirkt er in eignen Verbindungen, und desto zuversichtlicher wirft er die Brücken ab, welche die Sprache dem Verständnisse baut."

⁴Cf. W. D. Whitney's review of Müller's Lectures on the Science of Language, in North American Review 100 (1865) 567.

⁵Whitney, Loc. cit.

⁶Cf. Whitney's review of Müller's On the Stratification of Language, in Atlantic Monthly 22 (Dec. 1868) 761.

REPETITION IN QUICHÉ DISCOURSE

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0. Introduction. Repetition serves various functions and takes many forms in all Quiché discourse genre, reaching its epitome in ritual shaman prayers, in which every new idea is repeated in couplet form with minimal changes. This paper is a preliminary investigation of repetition in "laymen's" Quiché¹ based on five texts: the first-person narrative and behavioral texts were written by Quiché authors; the expository and two procedural texts were tape recorded. Some uses of repetition are the same in all the texts, both in function and form, while others have more specific distribution. More study is necessary to clearly define the differences between genre and between oral and written style.

1. Functions of Repetition.

1.1. Linkage. In all Quiché discourse genre, repetition functions as the cohesive link between sections of the text.² In an oral procedural text on tortilla-making, the procedural steps sometimes are linked by stating one step of the procedure with an active verb, then making the same verb a perfect passive and repeating it as a stage for the next step:³

...y kač?axo,	...and you wash it,
kč?axtaxik, kaki?ex,	once it is washed, you grind it,
kki?extaxik, kaban ri lex.	once it is ground, you make the tortilla.

In the written behavioral text a final exhortation is linked to preceding evidence by repetition of old information in a conditional clause. It essentially states that "if this, which I have told you is true, it is much better, then, to do this and this":

we ri qa nan qa tat ri qəxil qa tʔaqat kkisač ki rəxil,
kkikos kib če u qʔixlašik xun xasač ri man ksalab tax,
man kč?aw tax, ri ša ksač u wəč...

*If our ancestors and neighbors lose their money,
wear themselves out for worshipping a thing that doesn't move,
that doesn't talk, that is just perishable...*

This conditional clause repeats the following earlier statements:

kkisač ri ki rəxil če u loqʔik ri pom.
They lose their money for buying incense.

ri winaq kkiqʔixlax... ...ri dios ri man ksač tə uwəč...
The people worship it... ...the God that never perishes...

1.2. Extent. Repetition for the purpose of expressing the extent or intensity of an event or state is found in all Quiché discourse genre.³ It is characteristic of the peak episode in a narrative. In the written first-person narrative about a bus trip, the author's arrival and descent from the bus begin the peak, and he mentions four times that he was left there:

...y ri in šine kanoq čupam ri kamioneta...čila šinkanax wi.
...and I got out (left behind) the bus....there I stayed behind.
 ...šaq in k'o čik čila?. ...či in k'o čila?...
...just that I was there. ...that I was there...

In the oral expository text, which is about a radical change in the author's life, there is an abundance of emphatic repetition at an especially emotional point:

in čučqaw y yab ri walk'ual y
I'm a shaman and my child is sick, and
 in čučqaw y šinkamsax bi walk'ual
I'm a shaman and I caused my child to die,
 in čučqaw y kinq'abarik
I'm a shaman and I get drunk,
 in čučqaw y tantas kosas mak kinbano...
I'm a shaman and I do so many sinful things...
 ...in k'o pa čučqaw.
...I'm involved as a shaman.

1.3. Control of Information Rate. The rate at which new information is introduced is regulated by repetition of old information along with the new. In the expository text the verb "I went" is used three times, adding information each time about where the author went:

...y šinbe ronoxel lugar, šinbe pa taq xun tinimit concepción...
...and I went everywhere, I went all over one town Concepción...
 ...čila? šinbe čo ri santo.
...there I went before the saint.

1.4. Keeping the Theme Line Clear. The most notable function of repetition in Quiché is that of marking theme with a "sandwich" effect. An entire discourse, a section, a paragraph, or a sentence can be "sandwiched" between two statements of its theme. The procedural text on washing clothes begins and ends in this way:

ri uč'axik ri ač'iaq....are wa? ri weta'am čix ri ač'iaq.
As for washing clothes...This is what I know about clothes.

The behavioral text has three sections. The first is a well-formed embedded expository discourse composed largely of "theme sandwiches" as described above and gives background information about activities at a ritual site. The following two statements of theme enclose a paragraph telling of the importance of this site:

nim ubanik keča če...
"It is very important," they say about it...

...rumal reč čielinaq uđixol kumal ri winaq čí nim ubanik ri abax.
*...because of people having spread the word that the stone is
 very important.*

The second section gives a personal interpretation of the information in section one, repeating much of what was stated there: "When I saw all this, I thought they were wrong." The third section is clearly behavioral and contains no "theme sandwiches". It does repeat themes from the previous sections, exhorting the reader to worship the living God instead of the stone on the mountain. For example, section one describes the people's belief that the stone is the source of all:

pa ki čomanik ri winaq čí are ri paskual abax
*In the people's thinking that it is the Pascual Stone
 kyow noxel ri xastaq ke...
 that is the one who gives all their belongings...*

In section two this is interpreted as a misunderstanding:

e are k?u winaq wa? ri sačinaq ki čomanik, man kkič?ob tax
*So, these people are the ones who have lost their thinking,
 they don't know
 čí ri dios k?aslik ri yowinaq ronoxel ri xastaq...
 that the living God, who is the one who has given everything...*

From this point in section one, a list begins of the things the people ask of the stone, believing that it is their source. Section two goes on to list the things that the living God gives, recognizing him as their source. Section three picks up the same theme in order to exhort the readers:

...sibalax uđ ri uyik ri xastaq qe če ri are?
*...it is very good for us to give our things to him
 rumal reč čí are yowinaq čqe ronoxel.
 because it is he who has given all to us.*

This text is like a tapestry with a "warp" of themes introduced in section one, then woven through with a "woof" of the author's interpretation of those themes in the last two sections in order to bring out the author's message by contrasting the "colors".

1.5. Disclamation. An author may disassociate himself from what he is writing or telling for cultural or personal reasons by use of a quotative which indicates that "other people believe this but I don't". Disclaimers are difficult to distinguish from simple quotations, but may be identified by considering socio-cultural factors: the status and beliefs of the author, his subject, his audience, etc.⁴ The author of the behavioral discourse is a Christian pastor writing about ancient Mayan beliefs and activities. He prefaces his description with such a disclaimer:

...y ri winaq...kkibix čí sibalax nim ubanik.
*...and the people...say that it is very important.
 nim ubanik keča če...
 "It is very important," they say about it...*

1.6. Listing. Lists of items, actions, people, etc., are only found in these texts accompanied by a repeated frame, repeated with each item in the list, not just mentioned with the first. Examples of this occur only in the expository and behavioral discourses, but it is likely that study of other narrative and procedural texts would yield examples. The following list of nouns is found in the oral expository discourse:

<u>wuk?am</u> <u>be</u> koʔix,	<i>I carried flowers,</i>
<u>wuk?am</u> <u>be</u> xun su?t...	<i>I carried a cloth...</i>

In the behavioral text a conditional clause forms a repeated frame:

... <u>we</u> <u>kkax</u> kulew,	... <i>if they want land,</i>
<u>we</u> <u>kkax</u> ki rəxil,	<i>if they want money,</i>
<u>we</u> <u>kkax</u> ki qʔinomal ki čak,	<i>if they want riches or work,</i>
<u>we</u> <u>kkax</u> uʔil pa ri ki	<i>if they want goodness for their</i>
kʔaslemal...	<i>lives...</i>

1.7. Expressing Contra-expectation. Repetition may be used to highlight an event which took place even though there was an obstacle that might have led us to expect otherwise:

...kkikuy ri xastaq ke ri e are?,
 ...*they endure the lack of their things,*
 pune kenumik, kkikuy...
although they hunger, they endure it...

1.8. Participant Reference. It appears that repetition is one device for distinguishing and highlighting the participants of a discourse. In the first point of the behavioral discourse the Pascual Stone is always referred to with an accompanying restrictive clause which repeats old information and marks him as the mainline participant:

...ri abax ri kʔo čila?... *...the stone that is there...*
 ...ri abax ri kʔo puwi? ri *...the stone that is on top of*
 xuyub ri?... *this mountain...*
 ...ri abax ri kʔo u palax *...the stone that has a face that is*
 ri kʔo puwi? ri xuyub ri?... *on top of this mountain...*

When the stone goes out of focus in the second point it is no longer referred to with accompanying restrictive clauses, but rather as "the stone". In the last two sections, when "the living God" is in focus, he is referred to in this manner:

...ri dios ri man ksač tə u wəč... *the God that never perishes*
 ...ri dios kʔaslik kʔo čikax... *the living God who is above*
 ...ri dios kʔaslik kʔo čila? čikax... *the living God who is*
there above

2. Forms of Repetition.

2.1. Verbatim. Exact repetition is not frequent; however there is at least one example from each of the discourse genre. In the bus-trip narrative there is an example of verbatim repetition which carries the movement along the event line:

y špe ri kamioneta... *And the bus came...*
y špe ri kamioneta... *And the bus came...*

An example from the expository text is the verbatim repetition of in čučqaw "I'm a shaman" (see 1.2. Extent).

2.2. Reduction. Often when an idea is repeated, it is reduced in form the second time it is stated. For example, in the expository text two clauses are reduced to one:

...siblaš k'aš kuna? ri wanima? ri šinriq oxer.
...my heart really feels pain at what I found in past times.
k'aš ri šinriqo...
What I found hurts...

2.3. Expansion. The opposite of reduction also occurs commonly. Instead of reducing the information, more is added the second time the idea is stated. The following example is from the narrative:

...šaq k'o čik pa ri be, y ya nax čik k'o pa ri be.
...still just by the road, for a really long time by the road.
...či ya nax čik k'o ri kamioneta pa ri be.
...that the bus had already been by the road for a long time.

2.4. Synonymy. In ritual shaman prayers a line may be repeated with slightly different phrasing, or the only difference may be the substitution of a synonym. This also occurs in nonritual texts, as can be seen in these examples from expository discourse:

pero man k'o tā xun kos šinriqo uš...
But there was not anything good that I found...
...pero man k'o tā xun kosa šinriqo kikitomal.
...but there was not anything happy that I found.
...šinresax pa šq'olax mak,
...he caused me to go out from very muddy sin,
šinuma? loq pa ri nimlax mak...
he brought me out from very great sin...

2.5. Inclusion. A general statement may be made, then repeated in two or more statements which give explicit details only implicitly included in the first, as in this example from the behavioral text:

...čila? kkičak wi ri xastaq ke ri kkitixo,
...there they cook their things to eat,
kkičak ri ki kafe, kkimi q ri ki wa čila?...
they cook their coffee, they warm their food there...

2.6. Negated Antonym. An idea may be expressed in two statements, each containing one of a pair of antonyms with one of the antonyms negated (Longacre 1976: 134). Either of the statements, the affirmative or the negative, may occur first in the sequence.

The following example from the behavioral text shows the affirmative statement before the negative:

...kʔo čunaqax ri tinimit chichicastenango,
...near the town of Chichicastenango,
 man nax tax kʔo wi če ri tinimit.
not far from the town.

A negative statement followed by an affirmative occurs as part of a dialog at the peak of the first-person narrative text:

man kine tax, kinča čke.
"I am not going," I tell them.
 šaq waraṭ kinkanax wi, kinča čke.
"I am staying right here," I tell them.

2.7. Rhetorical Question. Only in the behavioral text is there repetition of previous information in rhetorical question form, which causes the reader to think through the old customs described in section one of the text. It is a turning point at which the author stops explaining and begins his interpretation and persuasion. Longacre (1976: 205) says of rhetorical questions:

"The purpose of the rhetorical question in expository discourse is to elicit attention; it is essentially a teaching device. In hortatory discourse, rhetorical questions may be used to reprimand as well as to teach."

It is likely that by saying "why do they...?" the author of this text is really saying "they, and we, should..." in the following:

xasče sibalax nim kkil ri winaq ri xun abax ri?
Why do the people see as important this one stone
 ri ša banom kan kumal ri winaq oxer?
that was just made and left by the ancestors?

This question refers back to two previous statements:

ri xuyub ri? sibalax nim ubanik čke ri winaq chichicastenango.
This mountain is very important to the people of Chichicastenango.
 ...ri kikʔutum kan ri qa nan qa tat nabe.
...that our ancestors have left us from early times.

2.8. Explanatory Parenthesis. Some expository discourses are sprinkled with dependent parenthetical clauses which explain new terms to outsiders, saying "this is what we call it". The expository text included in this study contains four terms which are explained in this way. One of them, "woman sinner", is likely not a literal woman but rather a man playing a ceremonial role:

y al tiempo šinkox škʔay če ri išoq axmak,
And at that time I put a whip to the woman sinner,
 kqabix če...
as we call her...

The following is from embedded exposition in the behavioral text:

...čuwəč ri paskual abax, kkibix če...
...in front of the Pascual Stone, as they call it...

2.9. Deixis. In all discourse genre, expressions like "with that" or "following this" serve as a link between old and new information by pointing back to the old before adding the new. This structure is not repetition, but is used in place of repetition. In an example from the narrative text, a deictic phrase refers back to the four clauses preceding it:

y noxmal špe pa ri nu čomanik	<i>And slowly it came to my mind</i>
či k'o ri nu dirección	<i>that I had an address,</i>
y šinwesax ri alax wux,	<i>so I took out the little paper,</i>
šinok či rilik.	<i>I started looking at it,</i>
ruk? wa šinč'ob ri be...	<i>With that, I recognized the road.</i>

2.10. Summary. Both the narrative and expository texts close with a summary statement which repeats what the text is about, but adds no new information. The narrative summary begins with a deictic phrase which points back to the whole text:

are wa? ri xun čixobelil ri šinriq pa ri be
This is the story of what I encountered on the road
 aretaq šinpe waral pa we kapital.
when I came here to the capital.

The expository summary does not begin with deixis, but merely summarizes the two major themes of the text:

pues maltioš če ri nu qaw,	<i>Well, thanks to my father,</i>
šinresax pa šq'olax mak,	<i>he took me out from very muddy sin,</i>
šinuma? loq pa ri nimlax mak,	<i>he brought me out from great sin,</i>
čanim ri? kinkikotik,	<i>right now I am happy,</i>
rumal reč ri kieb ošib	<i>that is the reason why the 2,3</i>
xumpax čix wačalal.	<i>words, my brother.</i>

2.11. Preview. The preview is a statement made in anticipation of what is to come which is expanded in the rest of the text. It may be as simple as a one clause statement of the text theme, as in the procedural text about washing clothes:

ri uč'axik ri ač'iaq,... *As for washing clothes,...*

In the narrative text, however, a full paragraph preview is given, then the event line digresses and the main body of the narration begins, often referring back to the preview for linkage purposes (see 1.1. Linkage):

aretaq šinpetik	<i>When I came,</i>
šinwalax baxče?	<i>I got up early</i>
y šinq'atux ri kamioneta	<i>and I stopped the bus</i>
reina utatlan reč kičē	<i>"Reina de Utatlán" from Quiché</i>
y špe ri kamioneta	<i>and the bus came,</i>
šuxok čupam	<i>and we got into it,</i>
y šuxpetik.	<i>and we came.</i>

2.12. Overlay. Grimes' study of overlay (1972) deals with narrative material which is organized into repeated stretches of speech which he calls "planes". Each plane is a narration of the same sequence of events. He states (p. 516) that:

"The difference between successive planes of an overlay, however, is that no single plane gives all the information contained in the whole overlay; one plane is not just a summary of another... The items it shares are those that are highlighted... and the ones that are not held in common are the partially different contexts that provide the relief."

The expository discourse points in the ex-shaman's testimony are arranged in the same structure Grimes has described for narrative discourse. There are five planes which together comprise the body of the text, but each plane contributes a slightly different set of points, totalling ten in all, which will be referred to by letters A through J. The overall theme is two-fold: what life was like before and what life is like now. The progression of expository points is, for the most part, from the past to the present.

Plane 1 introduces four points:

- A. I learned costumbre (ritual customs).
- B. It was a painful life.
- C. I felt it was not the truth.
- D. I found Jesus Christ.

Plane 2 repeats three of the above and expands on point A:

- A. I did costumbre.
 - 1. I went burning.
 - 2. I whipped the woman sinner.
- C. It was not the right way, not God's truth.
- B. It was a dead life.

Plane 3 adds one new point and repeats two:

- E. I worshipped idols.
- B. I found nothing good; just pain.
- D. But now I'm thankful.

Plane 4 repeats four points and adds three new ones:

- E. I worshipped idols.
 - 1. My wife went with me.
 - 2. I carried flowers and a cloth.
- B. There was nearly no good.
 - 1. I committed many sins.
 - 2. There was no happiness.
- D. But now I have believed in Jesus Christ.
- F. I am his child.
- G. I am happy now.
- H. I am sorry about the past.
- C. Costumbre is not good.

Plane 5 repeats three points and adds two new ones:

- B. I found pain.
 - 1. I committed many sins.
 - 2. My eyes were closed.
- G. I am happy now.
- I. We are going to Heaven.
- J. There is no good on earth.
- D. I believed in Jesus Christ.

Point B occurs in every plane, and point D occurs in all but the second, and both are reflected in the closing summary (see 1.10. Summary). They are the highlighted themes of the text:

- B. It was a painful, dead, sinful, no-good life.
- D. I found and believed in Jesus Christ and am thankful.

3. Conclusion. The study of repetition overlaps the realms of reference and grammar. It is closely related to studies of thematic prominence, lexical cohesion, information rate, progression of events, grammatical grouping, participant reference, and literary style. These areas have not been dealt with in depth, and it is hoped that future studies will disclose their relevance to redundancy in Mayan languages.

Notes

1. Quiché, a Mayan language, is spoken by approximately 700,000 people who inhabit the departments of El Quiché, Totonicapán, Quezaltenango, Suchitepequez, and Retalhuleu in the western highlands of Guatemala. There are regional variations that divide the language into several dialects. Texts from two dialect areas are included in this study: Quiché of Chichicastenango and Quiché of Cantel.

This study is partially based on data gathered in the Chichicastenango municipality during residence there in 1978 under auspices of the Summer Institute of Linguistics. I am indebted to David and Marilyn Henne, SIL field workers, for their contribution of additional text material, and to David Fox, also with SIL, for his help in identifying morphemes.

Preparation of this paper was done during a Mayan discourse workshop held by SIL in the fall of 1978, directed by Dr. Charles Peck. Derbyshire's (1977) paper on discourse redundancy has been the pattern for organization of the study, and general works on discourse done by Grimes (1975), Longacre (1976), and Callow (1974) have provided labels for many of the features discussed. See Longacre and Woods (1977: 2.4) for an explanation of the basic discourse genre.

2. Longacre (1976: 204) finds that in many languages narrative and procedural discourses have "tail-head" linkage; expository discourse has linkage through sentence topics and parallelism; and hortatory (behavioral) discourse has linkage through conditional, cause or purpose margins. The Quiché texts in this study exhibit a similar linkage system.
3. Grimes (1975: 81) gives Pidgin examples of verb repetitions. He says that "the particular number of repetitions is more like an iconic representation of extent, with more repetitions for more time."
4. David Fox, personal communication.

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DOMINANCE PATTERNS IN CONVERSATIONAL INTERACTION

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0. Introduction

In the last two decades researchers have identified a great number of dominance signals that human beings display during conversations. This research has, moreover, shown that a major part of that information is communicated nonverbally. For instance, in one experiment Argyle et al. (1970) found that the nonverbal message carried more than four times the weight of the verbal one. Experiments such as this one have convinced many scholars that the nonverbal gestures in conversational interactions must be studied just as systematically as the verbal utterances.

1. Problems with the concept dominance in conversation research.

Among the verbalizations that supposedly reveal dominance-submission relationships, Lakoff (1975) has identified the presence or absence of certain syntactic constructions, such as tag-questions, the use of various forms of politeness, and certain intonation and voice patterns; Brown and Gilman (1960) have shown how pronoun systems signal relationships of power as well as of solidarity, and Brown and Ford (1961) have demonstrated how the address system in English is used for the same purpose.

Among the nonverbal dominance signals listed and described in the literature is first of all the manipulation of the spatial setting, such as leaning back in one's chair to speak while one's palms are on the back of one's neck or head (Schefflen, 1972), sitting with one's feet on one's desk (Nierenberg and Calero, 1973), giving the impression of height through the chin-up position (Henley, 1977), and leaning towards the conversation partner, thereby invading the other's personal space (Henley, 1977). Other dominance signals are 'steepling', i.e. the gesture of touching the fingertips together in a raised position (Nierenberg and Calero, 1973), hand-on-chin and hand-to-face gestures (Henley, 1977), and pronounced hand gesticulation (Henley, 1977 and Duncan, 1974). According to Henley, 'staring, pointing, and touching may [also] be considered as dominance gestures with the corresponding submissive gestures being respectively, lowering or averting the eyes, stopping action or speech, and cuddling to the

touch' (1975:197). Finally, speakers can exert dominance by the way they pace their conversational contributions and, in general, by failing to submit to the turn-taking rules as formulated by Sacks, Schegloff, and Jefferson (1974), resulting in interruptions and overlaps rather than producing the predicted smooth transitions. Zimmerman and West (1975) and West (1979) have treated interruptions as if they were sure indicators of conversational dominance. Although this list of dominance signals is by no means exhaustive, it suffices to illustrate the general research trend.

But when one examines that research more carefully, one experiences a number of difficulties. For one thing, what exactly is meant by 'dominance'? Sometimes it seems to be equated with 'power', even if the two concepts are ostensibly defined differently, as in Henley (1977). At other times, 'dominance' is used as a synonym for 'domineering', as in Zimmerman and West (1975). In still other analyses, conversational dominance refers merely to 'having the floor', a problem that has been so perceptively dealt with by Edelsky (1980).

Yet even if we could agree on a consistent use of the concept 'dominance' in conversational research, there are still other problems to be resolved. Although much of the research on 'dominance' has been carried out on male-female dyads, researchers have not been able to resist the temptation to generalize from their findings to other social situations, as when Henley (1977) insists that her book is 'concerned not with sex or gender, but power'. It attempts to demonstrate that the observed "sex differences," "race differences," and "class differences" in nonverbal behavior may be traced to differences in power' (p. 2). An equally serious shortcoming is the assumption on the part of some researchers that dominance is a simple concept that applies to one of the participants in a conversation at a time. Such an assumption is implicit, for instance, in the research carried out by Zimmerman and West (1975). Finally, there is a question as to what dominance signals indicate: Do they show the analyst who is dominant in a conversation or merely who is trying to dominate.

In this paper we will be particularly interested in the last two problems we have mentioned. Dominance will here be defined as the control conversation partners have over the conversation. Our evidence will derive largely from two conversations. The first conversation (Tape A) is an excerpt from a two-hour oral recording between three adult females, designated as A, E, and N in the transcription. (See Appendix.) We intend to show with that conversation that dominance cannot be assigned uniquely to any one of the three participants since all three may be said to control different aspects of the conversation at the same time. The second conversation is an excerpt from a video tape of an undergraduate linguistics class, the focus being on one conversational dyad, involving two middle-aged men.¹ We shall argue that it is an example of a conversation in which the participant

who uses the most dominance signals is not the one who controls the conversation.

2. Patterns of dominance split: the case against uniqueness.

The conversation on Tape A was recorded in the home of A and E, two female graduate students in an English department who like dogs and horses among other things. A and E have come back from the stables after a slight accident with a horse. A good female friend N is visiting in their home, where the three are sitting in the living room listening to records. An unusual feature of this section of the conversation is that E and N are not talking directly to each other, although earlier and later they do. This results in an interesting triangle in which both E and N direct their conversation to A, but never to each other. In fact, N is occasionally ignored by both A and E. About halfway through the conversation there is a sudden shift in conversational roles. Before that point A and E are interacting as friends, even though E is angry with A for having been so careless; from that point on E assumes the role of a riding instructor who treats A as her pupil.

As we tried to determine who dominates the conversation, we began to notice that there were a number of facets to conversational control, that are so easily glossed over when the single term dominance is used. On the surface, E, who is scolding A for her accident, is clearly in control; this is particularly true for the second half of the conversation. However, some have noted that there is an undercurrent of control exerted by A. We will come back to this point directly, but first we need to examine the conversation in a little bit more detail.

In Esau and Poth (1980) we have argued that conversational interaction varies along a number of scales, as Joos (1972) had already proposed. Three of the scales we investigated were the dominance scale, the sincerity scale, and the intimacy scale. In order to understand the dominance patterns in this conversation, we need to examine briefly where the conversation falls on the sincerity and the intimacy scales. In other words, one of the difficulties researchers face when analyzing conversations is that there is frequently a complex interaction among the various scales that is easily lost sight of when we begin to slice up conversations.² Moreover, conversational interaction in groups of more than two has its special dynamics that cannot be captured if we approach such group interaction merely in terms of series of dyadic conversations.³

Let us first examine the position of the conversation along the intimacy scale. In the beginning, the conversation is located toward the positive end of the intimacy scale, but when E shifts into her riding instructor role about halfway through the conversation, the interaction becomes consultative to formal. The shift along the intimacy scale is clearly reflected in the

style levels the participants use. If we use Joos' (1961) labels, we would describe the style at the beginning as 'casual'. But after E shifts role, she also shifts into a consultative style. The following excerpt illustrates that shift:⁴

E: Suit your bleeding self!

A: I don't under

N: Bloody hell

A: I don't know why he can't see me I'm * * * eyeballing him like that

N: (laughs)

A: I can see him

E: He can't help stepping on you if you fall right in bloody front of him; if you fell away from him [and] happened (unclear)

A: to fall in in front of him and rolled, he could miss you * * but not if you come right in front of him (ll. 52-63)

Beginning with 'He can't help stepping on you if you fall right in bloody front of him' E's sentences become more and more complete. They are often highly complex: note E's if-then construction that marks the beginning of the shift. As E proceeds to explain riding methodology in a very measured staccato voice, there is an obvious increase in equestrian jargon, known primarily to A and E but not to N.

One of the nagging questions for the researcher is: 'Why do the participants change their conversational images midway through the conversation?' The answer, we believe, is found in A's position on the sincerity scale, which is, no doubt, related to audience awareness. In other words, A's playful insincerity appears to serve both as a defense strategy against E and as a device to sway N, who functions as audience. There is a noticeable increase in A's insincerity just before E shifts role. This is signalled linguistically by a marked rise in pitch (about $\frac{1}{2}$ an octave and a more constricted /r/ in A's 'This part of his neck * * right behind his ears' and finally a rather unconvincing and weakly articulated 'I don't understand'. At this point E responds with 'Suit your bleeding self', uttered with increased volume, and shifts into consultative style as she takes on the role of the riding instructor.

As far as dominance is concerned, the conversation begins with E scolding A, but she proceeds more with the concern of a friend than with the exactness of a teacher, as she does later. N is trying to make peace to keep the conversation from turning into a fight, at least on the surface. But as we will see directly, N's purpose is more complex than that. If we look at the turn-taking devices for evidence of dominance, we find that there are long gaps at first, marking perhaps the tension, but they virtually disappear as E takes more control of the situation. Turn sizes are unevenly distributed, with E having by far the greatest amount of speaking time. The turn openers A uses,

including but, but I, and yeah but, clearly show that she is on the defensive.

Yet while E is in control of the topic and the time, there is a sense in which A controls aspects of the conversation. To see this, it is necessary to examine how A, E and N interact. Since E and N do not talk directly to each other, we have the following conversational situation as in Fig. 1:

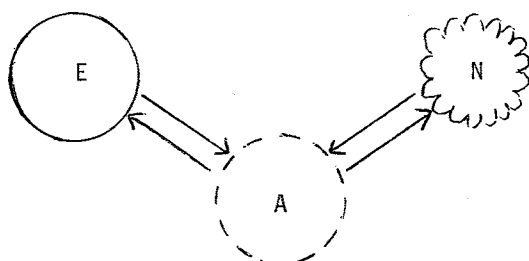


FIG. 1: CONVERSATIONAL TRIANGLE IN TAPE A

We have already indicated that A and E start out with very similar conversational images but end up with quite different ones after E assumes the riding instructor stance. Turning now to N's contribution, we notice that N is trying to become part of the interaction; she does this first by jokingly defending A, i.e., she sides with A. However, when the strategy fails, she sides with E. It is interesting to note that this shift occurs at the same point as E's role shift, and it appears again that A's insincere tone precipitates N's shift. From that point on N sides with E in telling A why she could have been seriously hurt. N uses the same signals that we documented for E. After E's 'Suit your bleeding self', N responds, although perhaps jokingly at first, with 'Bloody hell'--a phrase she does not ordinarily use. The evidence from turn taking also supports our claim that A somehow controls or at least determines the direction of the interaction between the three participants. For instance, there are seven overlaps in the conversation, always with A as one of the speakers. Since E and N do not talk to each other directly, this is to be expected. What is significant, however, is that A is the one who overlaps E's turn rather than the other way around.

So far we have examined the conversation as if it were an entity in itself. Actually, the segment we have examined is part of a two-hour stretch of conversation. If we had continued the transcription, we would have seen another interesting development running through the conversation: there is a sense in which N can be said to control the conversational interaction. As we indicated earlier, N's joking is clearly an attempt to defuse a rather explosive conversation between E and A, where face threat is used to counter face threat. Notice particularly

the following turn sequence between E and A, where A responds to E's face threat with a face threat of her own:

E: Turkey, you should have had your hat on!

A: How would that have helped my collar bone?! (11. 8-9)

Although N appears not to be successful at first, after having sided with E, she returns to her earlier 'joking' strategy, as illustrated with the following sequence:

A: Why can't I land on my feet?

E: That's a jolly good way to break an ankle I know somebody who did it *. *. Sermonette over * * * Questions * * * * * laugh

N: What's an inside leg?

All: laugh (11. 90-96)

This time she is successful and immediately after the point where the transcript stops, the conversation turns into a joking session.

Incorporating these observations, the dynamics of role shifting among the three participants may thus be diagrammed as in Figure 2:

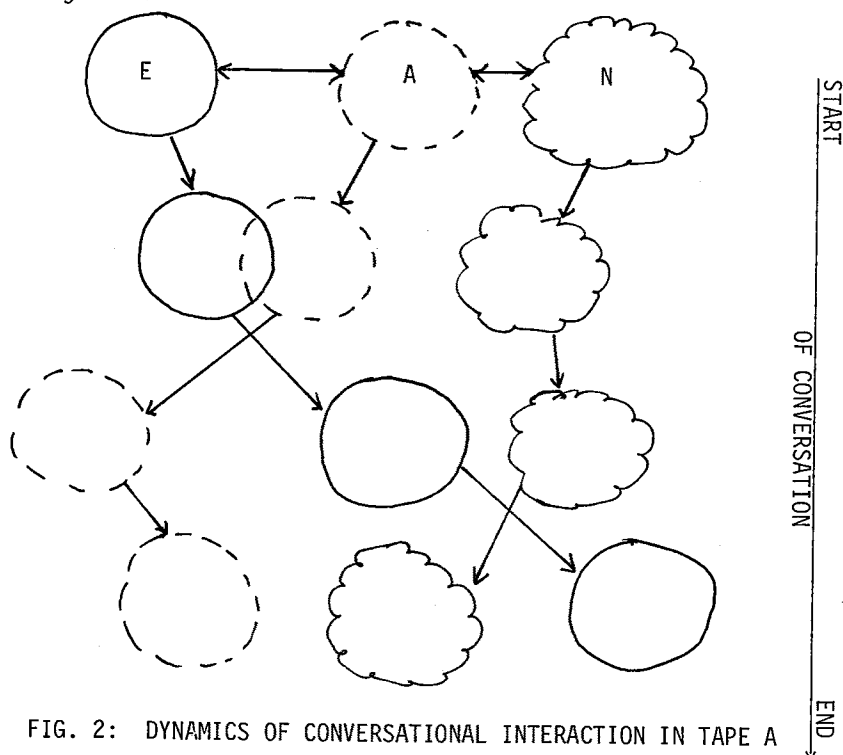


FIG. 2: DYNAMICS OF CONVERSATIONAL INTERACTION IN TAPE A

At the start of the conversation, the three participants E, A, and N may be said to be at equal distances. (See the first line of Figure 2.) As the conversation progresses, E and A move closer and closer together, never permitting N to become a full participant in the interaction. At about the midpoint of the conversation a sudden shift occurs: E not only distances herself from A, but she also moves closer to N. (Note the cross-over in the diagram.) Toward the end of the conversation, N places herself in an intermediate position between A and E, where she at first tries, and eventually succeeds, to neutralize the tension and consequently the conversational distance between A and E.

3. The function of dominance signals.

To examine the function of dominance signals, we selected a five-minute excerpt from a videotaped conversation between a sociology professor at Vanderbilt, labeled H (host) in our transcription, and a vice-president for public relations of one of the major TV networks, labeled G (guest). The two are discussing 'news' before a visible audience of 13 people in a linguistics class. As far as their conversational images are concerned, there is not too much difference between them; both are well-educated men in their forties, whose professional experience should qualify them to discuss news in front of an audience. The conversation is very much frontstage. Predictably, the style ranges from consultative to formal, with much background information on the topic given. This suggests that both speakers are well aware of the audience.

An inspection of the conversation shows that the host uses the following dominance signals:

- 1) leaning toward his conversation partner
- 2) pronounced hand gesticulation
- 3) hand-on-chin gestures
- 4) leaning back in his chair in a relaxed manner
- 5) faster rate of delivery
- 6) fewer pauses and, generally, pauses of short duration
- 7) interrupting his conversation partner
- 8) use of sociocentric sequences such as 'you know'⁵
- 9) increase of volume
- 10) gazing at his conversation partner

The most noticeable dominance signals we observed for the guest are:

- 1) chin-up position
- 2) hand-to-face gestures: (hand-to-chin and hand-to-throat gestures occur only once; only the hand-to-nose gestures occur with some frequency)

- 3) putting his hands behind his head and keeping them there (through two of his speaking turns)
- 4) gazing at his conversation partner
- 5) interrupting his conversation partner

If we were merely quantifying our results, there is no doubt what the analysis would show: the host uses more so-called dominance signals and uses them more frequently. However, everyone who has viewed the tape insists that the guest is in control. We could interpret this to mean that the use of dominance signals does not necessarily show that a speaker controls the conversation but merely that he is trying to control it. It is quite possible, too, that an overuse of dominance signals gives the impression that the speaker is not in control.

But if the guest does not establish conversational dominance through orthodox dominance signals, how does he achieve it? Our analysis has shown that the guest uses a number of strategies which have apparently just that effect. First, we noticed an enormous difference in the amount of backchanneling done by the two speakers: fourteen (14) for the guest against twenty-six (26) for the host. Interpreted this means that the host receives much less positive feedback than the guest does. Second, even though the guest does not speak nearly as rapidly as the host and pauses much more, he, nevertheless, manipulates the tempo. At times one senses that he uses his very deliberate style to literally make the host wait. At other times, the guest appears to pause and to yield the turn to the host; but as soon as the host responds, the guest continues his earlier turn. It is as if the guest were luring the host into speaking by yielding momentarily but then immediately suppresses his turn. The following example illustrates the pattern:

- G: You use the word "affects" and I used the word "matters" which are two different words. * * * * *
- H: Yeah, that's what, that's
- G: It's not just affects, affects is part of it, but matters is a little broader, because it's affects.

The guest uses the same strategy in the following sequence, except that he yields, or pseudo-yields, by drawling the last syllable rather than by pausing:

- G: The topic of conversation, the concept, is not news in itself. Something has to be, somebody has to be doing something; something has to occur; some discovery has to come up from a sli--de
- H: Mm, but
- G: It can't just lie there. If we went on the air today and said, uh, the news today

A third strategy the guest uses is to anticipate what the host is going to say or ask, as illustrated with the following sequence:

- H: Umh mm. All right, what matters to people. Now is it
 what people think matters to themselves [or
 G: [it's both]
 H: is it what [NBC]
 G: [it's both]
 H: thinks matters?
 G: It's both. It's it's because we often will cover a story...

It is through strategies like these, we believe, that the guest controls the conversation, even though he does not use as many dominance signals as his conversation partner.⁶

4. Conclusion

Recent analyses of conversations have documented many so-called dominance signals. While these studies have greatly increased our understanding about conversational interaction, they have also raised some important questions. In this paper we have examined a number of these questions. In Tape A we saw a conversation with a special dynamics that made it impossible to assign dominance to any one of the three participants. Instead, all three were found to control different aspects of the conversation. In Tape B we examined the function of dominance signals. Specifically, we found that the speaker using such signals most frequently did not necessarily control the conversation. A mere quantitative analysis may thus at times be misleading, particularly if speakers use such subtle strategies as avoidance of backchanneling, manipulation of the tempo at strategic places, and anticipation of what one's conversation partner is about to say. These three strategies, no doubt, contribute to our viewers' perception that the guest rather than the host of conversation B was in control. It is our hope that future research on conversational dominance will pay particular attention to such strategies even if they cannot be quantified in any simple way.

FOOTNOTES

¹We wish to thank Professor von Raffler-Engel for making this tape available to us for analysis. A description of the tape and the procedure used for making it may be found in von Raffler-Engel et al. (1979).

²Although Joos (1972) had already warned linguists against slicing up conversation, his warning appears to have gone largely unheeded.

³See also von Raffler-Engel et al. (1979), where the same argument is advanced. Edelsky (1980), presenting evidence from the conversational interaction of a committee, comes to the same conclusion.

⁴The notational devices in our transcriptions are used as follows:

* ½ second; [] overlap; = no pause; () comments

⁵We are using the concept 'sociocentric sequence' in the sense of Bernstein (1962).

⁶The results summarized in this part of the paper are based on research carried out by Mary R. Maples (1980).

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APPENDIX

1. A. I don't even remember hurting myself
2. N. She fell off her horse?
3. A. Ah, was it this afternoon or did you see it this evening?
4. N. I saw it this evening
5. E. Uh, I don't remember
6. A. That's from me falling: that's a bruise.
7. E. That's from you falling.
8. Turkey, you should have had your hat on.
9. A. How would that have helped my collar bone! No, remember
10. when I came back I told you I had hit my head, or I said
11. something, was a little uh huh when I came back walking
12. over there cause when I flipped off and held him, I still
13. went into him. I would have broken my butt if I hadn't
14. held on to his neck though.
15. E. That's a good way to land under his feet and there's
16. nothing he can do about it. He won't step on you, A.
17. A. I wasn't straight under him * * * * *
18. E. Suit yourself * *
19. N. I almost broke my butt the other day
20. A. No, I didn't come down in front of his feet
21. E. Suit yourself! * * * * *
22. A. You should have filmed it * * * *
23. N. Film at 11:00
24. A. I was thinking, A fell off her horse today. Film at
25. 11:00.
26. E. I didn't * * * * say * * * that you did fall in front
27. of his feet * * * * but you can't always control it
28. hanging around the neck
29. A. No, I
30. E. hanging around the neck is a very dangerous thing to do
31. N. Unless you've got the strength in the back of the legs
32. to swing the body back up and throw the legs around the
33. neck again * * just kind of hang there with the horse
34. A. No, I went that way
35. N. I know * * * * *
36. A. [But it was a somersault]
37. N. [But if you keep going] that way and you bring the
38. legs up, you will still be facing the horse again with
39. your legs over him
40. A. [But I must have been cause] I hit him here
41. E. [Yeah, but A if you lost] your footing you would
42. have been under his neck * * * *
43. A. Yeah
44. E. right under his feet and there wouldn't have been a damn
45. thing he could have done about it because he can't see
46. you under there. If you'd have fallen [clear of his
47. A [this part of his

48. E. neck
49. A. neck * * right behind his ears
50. E. Yes that's still in front of his feet
51. A. Yeah, but he knew I was there * * I don't understand
52. E. Suit your bleeding self!
53. A. I don't under
54. N. Bloody hell
55. A. I don't know why he can't see me I'm * * * eyeballing
56. him like that
57. N. (laughs)
58. A. I can see him
59. E. He can't help stepping on you if you fall right in
60. bloody front of him if you fell away from him [and]
61. A. (unclear)
62. E. happened to fall in in front of him and rolled, he could
63. miss you * * but not if you come right in front of him
64. A. (unclear)
65. E. Next time when you're gonna fall, next time next time
66. you plan your fall, fall clear
67. A. I did
68. E. No you didn't
69. N. You fell right in front of his * * tracks
70. E. Uhhm
71. A. He was still by then
72. N. Yeah, but what if he had been at a fast pace, he would
73. have kept coming and went straight over you
74. A. (unclear)
75. E. You can't count on that A.
76. A. I didn't plan my fall
77. E. I told you to I have been telling her to plan her fall.
78. That's probably like your inside leg is your pole to
79. bend the horse around. The outside leg controls the
80. hindquarters the inside rein asks for the bend, the
81. outside rein controls it
82. N. I don't * *
83. E. Now you've got it on tape and you can listen to it in
84. your sleep
85. N. Uhm
86. E. You do not fall in front of the horse, you fall clear
87. you fall relaxed and you roll away * * you do not stick
88. your hands you land on your shoulders and your hip * * *
89. * * *
90. A. Why can't I land on my feet?
91. E. That's a jolly good way to break an ankle I know some-
92. body who did it * * Sermonette over * * * Questions
93. * * * * *
94. laugh
95. N. What's an inside leg?
96. All. Laugh

SOME SYNTACTIC FEATURES IN DIRECT- AND CROSS-EXAMINATION

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0. Introduction.* A major goal of the stylistic analysis of language use is to correlate linguistic variation with situational factors (Crystal and Davy 1969). In legal proceedings, one contextual variable that appears to influence courtroom dialogue is whether the examining attorney is questioning his own witness or a witness for his opponent. The purposes for the two kinds of interrogation are quite distinct: while in direct examination the attorney must allow the witness to tell his own story, in cross-examination he often wants to discredit or impeach the witness (Bodin 1962). These pragmatic differences appear to be reflected in certain syntactic features of the language used by an attorney as he takes each role. The correlation between variation in syntactic features and the different contexts of cross- and direct-examination is documented in an analysis of the transcript of the 1976 trial of Patricia Hearst in U.S. District Court. To report on that analysis, I will describe the procedure followed in the study and the results obtained, as well as suggest an appropriate interpretation for those results. Finally I shall consider certain problems inherent in investigations of this type.

1. Procedure. The corpus for the analysis consists of four hundred "turns" each for the chief defense counsel, F. Lee Bailey, and for the U.S. Attorney, James L. Browning, Jr. Since a "turn" is defined here as the words appearing in the transcript after the symbol "Q." and before the following symbol "A.", the present study depends to a degree on the court reporter's segmentation of the courtroom dialogue. For each attorney, four blocks of one hundred turns each were chosen: two blocks of direct-examination turns and two blocks of cross-examination turns. The main criterion guiding the selection of blocks for use in the study was for the examining attorney to have one hundred consecutive turns uninterrupted by a recess, a change in witnesses, or a lengthy argument with opposing counsel. The blocks eventually chosen, therefore, come from the interrogation of three major witnesses: Patricia Hearst, the defendant, and prosecution witnesses Dr. Joel Fort, a psychiatrist, and Tom Matthews, the young man kidnapped by William and Emily Harris and Hearst.¹ In order to provide two sets of comparisons for each speaker, the blocks were then paired as shown in Figure 1:

	Comparison ₁	Comparison ₂
Bailey	Hearst ₁ (direct)	Hearst ₂ (direct)
	Fort ₁ (cross)	Matthews ₁ (cross)
Browning	Fort ₂ (direct)	Matthews ₂ (direct)
	Hearst ₃ (cross)	Hearst ₄ (cross)

Figure 1. 100-turn blocks paired for comparison.

The syntactic features studied in each sample were subordinate conjunctions, negative verb phrases, non-inverted questions, and yes/no inverted questions. These features were chosen because of a subjective impression that they appeared more frequently in cross-examination than in direct.² In analyzing the samples, I calculated the frequency of occurrence for each feature in each of the eight blocks of one hundred turns. For negative verb phrases, all affirmative and negative finite verb expressions were counted; the percentage of the total that was represented by negatives was then calculated. Subordinate conjunctions, including relative pronouns, the clause complementizer *that*, and embedded question words, were contrasted with coordinate conjunctions by calculating the percentage of the total number of conjunctions that subordinates represented. The analysis of the occurrence of different forms of questions proceeded in two steps. With *question* defined as any clause or sentence ending with a question mark in the transcript, the percentage of non-inverted questions was compared to the percentage that was expressed in inverted word order.^{3, 4} Next, the number of inverted questions was divided by the number of yes/no inverted questions, in order to contrast the percentage of such questions with the percentage represented by *wh-* (information) questions, which necessarily appear in inverted form.

2. Results of the analysis. The percentages derived for the syntactic features were organized in the following matrices, designed to reflect the paired comparisons shown in Figure 1 above (§ 1).

		direct		cross	
		subordinate	coordinate	subordinate	coordinate
Bailey	C ₁	71	29	59	41
	C ₂	76	24	60	40
Browning	C ₁	54	46	59	41
	C ₂	47	53	52	48

Table 1. Percentage of conjunctions that are subordinate, contrasted with percentage that are coordinate, in each 100-turn block.

		direct		cross	
		negative	affirmative	negative	affirmative
Bailey	C ₁	3	97	9	91
	C ₂	4	96	14	86
Browning	C ₁	4	96	16	84
	C ₂	3	97	20	80

Table 2. Percentage of verb phrases that are negative, contrasted with percentage that are affirmative, in each 100-turn block.

		direct		cross	
		non-inverted	inverted	non-inverted	inverted
Bailey	C ₁	11	89	42	58
	C ₂	14	86	65	35
Browning	C ₁	12	88	53	47
	C ₂	21	79	42	58

Table 3. Percentage of questions that are not inverted, contrasted with percentage that are inverted, in each 100-turn block.

		direct		cross	
		yes/no	wh-	yes/no	wh-
Bailey	C ₁	59	41	99	1
	C ₂	70	30	95	5
Browning	C ₁	72	28	86	14
	C ₂	81	19	89	11

Table 4. Percentage of inverted questions that are yes/no contrasted with percentage that are wh- (information) questions, in each 100-turn block.

Certain differences appear in the data between the cross-examination and direct-examination samples: in most cases, the percentages for the four features studied--subordinate conjunctions, negative verb phrases, non-inverted questions, and yes/no questions--are higher in the cross-examination column than they are in the column for direct-examination. Such tendencies appear particularly striking in Tables 3 and 4, dealing with question form. In order to determine which differences are statistically significant, I analyzed the data of each line of Tables 1 through 4 in a chi-square procedure. Table 5 below shows those comparisons for which the differences in values are significant. Three levels of probability are included, to indicate which results remain significant at higher levels.

x = significant difference		Probability		
		.90	.95	.99
1. subordinate conjunctions				
Bailey	C ₁	x		
	C ₂			
Browning	C ₁			
	C ₂			
2. negative verb phrases				
Bailey	C ₁	x		
	C ₂			
Browning	C ₁	x	x	
	C ₂	x	x	x
3. non-inverted questions				
Bailey	C ₁	x	x	x
	C ₂	x	x	x
Browning	C ₁	x	x	x
	C ₂	x	x	x
4. yes/no inverted questions				
Bailey	C ₁	x	x	x
	C ₂	x	x	x
Browning	C ₁	x		
	C ₂			

Table 5. Results of chi-square for all comparisons.

An "x" in a particular cell means that, for the attorney involved and at that level of probability, there is a significant difference between his use of that syntactic feature in direct examination and his use of it in cross-examination. While these conclusions cannot be extended to apply to other attorneys or even to Browning and Bailey in other trials, the results of the analysis appear to confirm that, in this corpus: (1) Browning uses more negative verb phrases on cross-examination than he does on direct; (2) both Browning and Bailey use more non-inverted questions on cross than they do on direct; (3) Bailey uses more yes/no inverted questions on cross-examination than he does on direct. The data for subordinate conjunctions are inconclusive.

3. Interpretation of the results. Although Bodin (1962: 1-2) and Younger (1976: 1) both recognize several different kinds of cross-examination, Younger claims that the most common purpose in cross-examination is to destroy the credibility of the witness in the eyes of the members of the jury (1976: 1). In the corpus for the present paper, the samples of cross-examination analyzed generally appear to be destructive.⁵ As he

attempts to destroy previous testimony, the examiner will try to "force the witness to contradict himself" (Bodin 1962: 8). To "make the witness go where [he wants] him to go" (Younger 1976: 23), the attorney must maintain control of the examination through the use of "narrow leading questions" (Gallagher 1962: 31-32), that is, questions which suggest their own answers (Younger 1976: 22). Although not all yes/no questions are leading questions (Younger 1976: 22), Gallagher maintains that yes/no questions are the form most suitable for that purpose, since they give "the least possible leeway to a witness" (1962: 32). Yes/no inverted questions would therefore seem more useful in cross-examination; section 4 of Table 5 confirms that this form of question occurs significantly more frequently in the cross-examinations texts studied than in the direct examination samples. While non-inverted questions, which by definition are all yes/no questions,⁶ restrict the response to the same extent as do inverted yes/no questions, section 3 of Table 5 indicates that the non-inverted form establishes an even more significant difference between direct and cross than does the inverted form. Framed in statement word order, a non-inverted question may allow the attorney to describe his own version of events and to indicate the answer he expects. Younger encourages this attempt to provide the answer: "You put words in [the witness's] mouth. You make him say what you want him to say" (1976: 23).

This brief consideration of lawyers' texts on cross-examination indicates, then, that their authors are quite aware of the restrictive properties of certain question forms⁷ and of the advantages of such linguistic restriction. Perhaps that kind of awareness is one factor contributing to the differences noted here between the language used in direct-examination and that used in cross-examination.

4. Problems with the current analysis. While the purposes and principles of cross-examination provide some context for the results described in § 2, several problems remain. As a statistical treatment of data, this stylistic analysis depends on a structural approach to language which is, at base, reductionist. Ricœur (1969: 80) notes that structural analysis can succeed if it is used on a closed, static corpus, which is then segmented by binary opposition. But he considers the price of such a scientific approach to be the exclusion of the act of speaking (1969: 84) and, therefore, of the participants. Since this analysis of courtroom dialogue requires the act of interrogation to be studied as a static artifact, then segmented and classified into discrete elements such as non-inverted questions, the events of Patty Hearst's trial have been reduced. The complex experience of the trial's participants has been fractionated, and the participants themselves essentially left out. In the positivist search for generality, the particularity of each attorney's primary experience of the phenomena of the language situation has been discounted (Verhaar 1963: 11). The subjects of the speech

acts and their intersubjective participation in the game of communication (Gadamer 1976) have been excluded from the analysis.

Perhaps an emphasis on particularity⁸ and on the subjects of the discourse (Ricoeur 1969) would impede the discovery of systematic generality. But the kind of generality revealed in a study such as this is rather deceiving. While it may give the analyst an illusion of knowing a good deal about what happened, the generality achieved covers such a minute bit of the event analyzed as to be insignificant when compared with the enormous complexity of the actual situation. Since the essence of the communicative act is someone speaking to someone (Verhaar 1963: 10), Ricoeur (1969: 88) prefers the particularity of the speech act to the anonymous generality of the system.

One implication of the structural analysis of discourse can only be mentioned briefly here. When applied to literary texts, techniques such as those used in this study lead easily to the deconstruction of literary works as practised by Derrida (1967), de Man (1979), Marin (1975a, 1975b) and others. The segmentation that begins, for example, with classification of question types joins with the de-emphasis of the participants to produce a disintegrating, subject-less universe of arbitrariness. But such deconstruction is avoided in the turn toward particularity. Anchored in the perceived experience of the participant, the more phenomenological approaches to language advocated by Ricoeur (1969, 1976), Verhaar (1963, 1971, 1973), Pike (1964, 1967, 1978, among others), Becker (1979), and Becker and Hunter (forthcoming) allow for a more satisfactory study of the particular speech act than does a statistical structural (positivist) approach.

Notes

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¹ The degree of Hearst's cooperation in the Matthews kidnapping remains problematic.

² I derived this impression from watching the cross-examination of a witness in a case tried in U.S. District Court in Detroit.

³ Phrases that ended with question marks were not counted as questions because, lacking either a subject or a verb or perhaps both, they could not be classified as either inverted or non-inverted. The occasional distorting influence of the

need to classify the data is one of the consequences of a structural approach to discourse studies, discussed below in § 4.

⁴ In this study, all non-inverted questions are yes/no questions. Wh- (information) questions are by definition inverted, since non-inverted utterances such as "You did what?" are considered to be repetition rather than true questions.

⁵ The only example of cross-examination used in this study that shows signs of not being destructive is Bailey's examination of Tom Matthews. In general, Ms. Hearst's attorney seems to want to discredit the young witness. But when Matthews, himself a kidnap victim, describes his reluctance to obey his captors, Bailey encourages his testimony, apparently to lend credibility to Hearst's story of her fear of the Harrises.

⁶ As discussed in note 4 above.

⁷ Although negative verb phrases were shown to be significantly different for Browning (see Table 5), they are not treated in this section, as Bodin (1962), Gallagher (1962), and Younger (1976) do not discuss the significance of negatives in cross-examination.

⁸ See Becker (1979) and Becker and Hunter (forthcoming) for discussions of modern philology, in which particular features of single texts are studied.

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THE MANAGEMENT OF PITY IN BIOMEDICAL SPEECHES¹

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Pity we may define as a sense of pain at what we take to be an evil of a destructive or painful kind, which befalls one who does not deserve it, which we think we ourselves or some one allied to us might likewise suffer, and when this possibility seems near at hand.

Aristotle, The Rhetoric

Introduction.--While attending the Society II Grouping (Physiology, Pathology, and Immunology) of the 63rd Annual Meeting of the Federation of American Societies of Experimental Biology (FASEB), April 6-10, 1979, in order to tape record and observe the reading of papers, I heard presentations about mortality rates of successive groups of Fischer-234 rats, about decerebrated dogs and chronically tracheotomized cats and in the intervals, saw primate restraint harnesses and stainless steel guillotines in neatly graduated sizes, as I browsed through the vast equipment display hall. I was deeply affected by pity for the poor laboratory animals, all the while realizing that one procedure which I viewed as particularly horrible had as its aim the saving of human lives, even the lives of asthmatic children.

One speech was unique, in that about a quarter of its time was taken up with a filmed documentary of an expedition undertaken to capture research specimens. I was disturbed by scenes of animals struggling against captivity, still more by pictures of surgery to implant devices in live fetuses. After the session, a friend asked what I thought of the movie, and I had desultorily begun to reply on the basis of the structure of the speech, when rage broke through his initial calm. He explained heatedly that "everyone" knows that animals suffer during research, but that it is beyond bad taste to present graphic evidence. He added that scientists he had talked to shared his feelings and assured me that the bulk of those at the meeting must feel as he did.

Given that at least some biomedical scientists feel pity as I do, the present study sets out the ways in which they manage in

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their speeches at professional meetings. It is based on 49 papers from five sessions of the FASEB meeting and is limited to those of speakers exhibiting native command of a variety of British, Canadian, New Zealand, Australian, or American English. Speeches and speakers are cited by abstract number;---indicates an unrecoverable passage of whatever length. Since punctuation and paragraphing are systems devised for use with writing, it is effectively impossible to attain a "correct" transcription of the speeches, especially those which are informal in tone; I have attempted, however, to be consistent.

Rationale.--Initially, one may ask why biomedical scientists feel pity at all in the circumstances. Certainly, Aristotle would not have included as fit objects for pity enemies, slaves, foreigners, perhaps even women, absolutely not dumb brutes. In Aristotelian terms, biomedical scientists can pity each other, but not laboratory animals. However, unfortunately for them, scientists cannot exclude animals from pity, because the animal kingdom must be regarded as a continuum throughout biology and most peculiarly in biomedicine. Man is not a different kind of creature, just the highest on the evolutionary ladder. As much as any other, biomedical research rests on this assumption, since if lungs of lower animals are different in every particular from man's, research on them has no biomedical significance--a cruel dilemma, as it turns out.

The close relationship between man and higher animals is widely acknowledged. It is acknowledged implicitly in the use of who, whom, he, and his to refer to animals: "In A and B, I show you the animals who are held at 35°, then cooled....(5386)" 3484 vascillates between it and he in two consecutive sentences: "The animal was placed on its right side, and 6 sec. of data were collected on a breath recorder and a four channel Hewlett-Packard instrumentation tape recorder. The animal was then moved to a treadmill, where he was allowed...." Whom, as in 4257: "Our experimental model is the unconscious dog, all of whom..." probably reflects not only the continuity of the animal kingdom, but as well, the use of whom to mark formal tone, rather than simply objective case. The close relationship between man and beast is also acknowledged explicitly, in comparisons: "As you can see, sitz produced an inhibition in the dogfish erythrocytes similar to that seen in human erythrocytes (5661)" and "...carbon dioxide dissociation curve of turtle blood when contrasted to that of humans (5663)."

One need not be overly imaginative to see the implications for humanity in the man-animal relationship, in the use of man as research subject. There is not only Dr. Frankenstein creating a monster and Nazi doctors testing drugs on Jews in concentration camps, but in the U.S.A., for example, prisoners and the poor as laboratory animals, sometimes with consent, though scarcely informed consent. Close to us all is the likelihood of contracting some terrible disease and undergoing, through desperation, a regime of treatment via an experimental drug. In view of these

possibilities, pity might easily reach unmanageable proportions. In fact, biomedical scientists regulate it specifically in vocabulary, phonology, and syntax and generally in what they choose to say and what they choose to omit.

Vocabulary.--Euphemisms are apparent. In some studies, animals undergo the experimental protocol and then, to be studied, must be killed, but kill is absolutely tabued: it was not used even once in the 60 papers I heard. The term of choice is sacrifice: "They then breathed technicium sulfur colloid aerosol for 15 min. and were sacrificed 15 min. to 5 hr. later (5666)." They give their lives, presumably, in the great war against disease. Another such euphemism is terminate: "And then, we terminated the animal.... (3487)" It is permitted to speak rather more directly in the cases in which the animal is not deliberately killed by the experimenter, but dies as a result of the treatment. 5394 discussed mortality rates of laboratory animals. 3489 speaks frankly:

...the cardiac output tends to rise as the arterial PCO₂ is increased, reaching a peak somewhere around 200-250 mm. of mercury, before progressively falling and death of the animal occurring.... These points are the values obtained where the animal was at the lowest level prior to death, while these are the values obtained when death of the animal occurred.

Death is here treated quite objectively, as if it happened in the natural course of events, not as if causally related to the experimental protocol. It is interesting to note that phrases customarily used for the killing of a terminally ill pet, put to sleep and put down, are not heard, perhaps because they imply action for the animal's benefit and perhaps also to put the laboratory subject into a different category of animal.

A few of the studies use people as experimental animals. Attempts at impersonalization are shown in terms of reference to human beings in this role. If they are ill, they are first patients; if not, they are first exercising man, runners, athletes, even graduate students. Ultimately, they are all subjects, male and female, practically never men and women, people. In studies using lower life forms, it is of course necessary to make clear whether one is studying thus and so in the dog, boa, green sea turtle, or woodchuck. Once that fact is established, many speakers proceed to a greater degree of generality and impersonality by making subsequent references to a higher noun such as bird, snake, reptile or the still higher animal. The use of such terms reduces pity by avoiding a more specific reference; it also coincides with the impression of scientific generality imparted by the use of general terms.

Allow is another euphemism, as when the chronically instrumented dog is "allowed" to run on a treadmill to the point of exhaustion; force would be a more appropriate verb, since, at least for me, allow means that one does not impede something that would otherwise take place, a something that one does not

originate. Likewise, exercise seems to me to be used euphemistically, for it contains a feature of choice that is not present when a treadmill is turned on under the feet of an animal retained there and "allowed to exercise."

Phonology.--Potentially pitiable episodes in the speeches are not distinguished perceptibly in the sound system. A phrase like "...all of whom have been prepared some months previous to being studied with chronic tracheotomies and exteriorized carotid areas.... (4257)" which brings to mind a painful picture, is indistinguishable in intonation, stress, speed--in suprasegmental or paralinguistic feature--from a neutral passage from the same speech: "In this and in the subsequent presentation, we wish to discuss the implications of our data...." In fact, the only (apparently) planned deviation from the predominant key--a rather grave enthusiasm--is gentle humor.

Syntax.--Some syntactic choices appear to be a consequence of a need to avoid evocation of pity. The use of the passive construction for scientific communication--incidentally, far less in speaking than in writing--is commonly known. Generally, in the speeches, it is redundant to state the agent of the action, since the information is recoverable from the name(s) immediately following the paper's title, either in written or spoken form and so need not be repeated as thematic element (Halliday 1967a, 1967b, 1968). Beyond that, the passive voice has come to epitomize the scientific style, the impersonality which scientists assume in order to make their work appear to be already in the realm of public knowledge (Ziman 1968), which causes it to be used where the active voice would be less awkward. A further effect of the passive voice as used in biomedical speeches is to counteract the continuum premise, in separating research animal from researcher. Men are agents; animals are not. The animals show up different from men in that they are overwhelmingly passive subjects, not active subjects, even, sometimes, objects of prepositions (in dogs) and thus the mere sites of the experiment.

Firbas (1974) asserts that degree of communicative dynamism increases as the end of a sentence is reached. Dynamism--and evocation of pity--can be reduced by moving an element to the beginning of the sentence and also by reducing it to adjunct status. Decreasing dynamism, combined with euphemism, is illustrated in the following progression from greatest to the least:

We sacrificed the animals.
The animals were sacrificed.
The sacrifice of the animals....
The sacrificed animals....
After sacrifice....

Ultimate neutralization by syntactic means is deletion, the choice not even to mention the death of the animal, for example, which must be deduced from the sequence of events.

At the very efferent end of the outer marginal channel, as shown in the next slide, the outer marginal channel

is convoluted into several projections. And I might add that all of the micrographs are scanning electron micrographs of corrosion casts prepared from the microvasculature (5660).

The biomedical scientist understands immediately what it takes the linguist some time to realize: the catfish had to be killed for the study of its microvasculature.

Neutralization of pity is strengthened by the frequent absence (deletion, in transformational terms) of any mention at all of the laboratory animal:

Ventilation was measured by connecting the spirometer into a Tissot spirometer, and PCO_2 and hydrogen ion concentration for blood and CSF were measured with the appropriate electrodes....all measurements were corrected to body temperature.... To sample CSF, we could insert a 22 gauge spinal needle along the guide to --- line on the end of the cisternum (4257).

In the speech, there was no doubt whose ventilation was being measured and who was having a spinal needle inserted. Deletion of the word dog helped to divert attention from the evil being inflicted on man's best friend, which is clearly shown if that passage is compared to one from the same speaker in which he could have deleted, but did not, several references to the dog. Note that in this second passage, the consequences of being kept, studied, and transferred are not so immediately painful as inserting a spinal needle (above).

During the hypercapnea, the dogs were kept in an environmental chamber in which the CO_2 levels were controlled at 5%. 5 dogs were studied for as long as 3 wk., while 3 other dogs were studied for somewhat shorter periods of time. In order to study the animals, they were transferred from the chamber [emphasis added].... (4257).

5666 is likewise notable for extensive continued focus on organs, systems, and procedures just at the point where painful effects are most obvious:

7 cats were anesthetized with sodium pentobarbital, and an endotracheal cannula was placed through a tracheotomy. Catheters connected to pressure transducers were placed in the external jugular vein, a femoral artery, and also the esophagus. The second femoral artery was catheterized for withdrawal of arterial blood samples. A catheter was also placed....

As in 4257, focus in 5666 is away from the whole animal when the insult is greatest. Later, the flow of liquid to the cats is described, and the term animal is used four times, although it need not be there at all.

This is the part of the system that controls the flow of liquid to and from the animal. Oxygenated fluorocarbon liquid is delivered to the animal, and deoxygenated liquid is removed from the animal.... A strain gauge platform under the animal measures the changes in the animal's weight and hence, the liquid tidal volume and function residual capacity of the animal [emphasis added].

The direction of flow and the operation of the strain gauge are perfectly clear, even without reference to the animal, both from previous context and from accompanying slide.

Countereffort.--Content choice in the management of pity is seen in the deletion of specific mention of the research animal at points where the emotion is greatest. Some speakers take care to counteract pity by including items which reflect their humanness. There is occasional mention of anesthesia during subject preparation (5666, 5662, for example). Sterile conditions are mentioned (3484). 3773 and 5663 note the use of noninvasive techniques, although the latter has overreached himself, as he admitted in the Q-A period, when someone pointed out that venous cannulas cannot be called noninvasive. Such easily deletable references to humane procedures, coupled with very sparse mention of force: "After the mouth was pried open.... (5664)" and of resistance: "This animal has a low pCO_2 , and this animal struggled a lot.... (5668)" demonstrate that researchers are not only making efforts to lessen the evil befalling animals, but that they want others to know it.

Use of pity.--Finally, a single speaker openly evokes pity for the human subjects of her study:

One thing is that PM, although he was, he is a 3 yr. old and he had all the same sorts of values as TS did, he was really quite sick--he was a very chirky little boy of 3--but shortly after the study, he did have a hemolytic crisis and his health was deteriorating. There's not much hope for them at all. TS is still, is living in a hospital, if he's still alive at all (5395).

What legitimates presenting a picture of a three year old terminally ill from a genetic defect? His suffering is not the result, but the cause of the study. Pity can be faced openly if harnessed constructively: to encourage biomedical scientists to undertake studies to improve the human condition, despite the cost to lower animals.

Anomalies.--As expected, an occasional scientist occasionally falls out of step with the majority. 5669, for example, includes a slide of a preparation which seems perfectly ordinary: "This shows surgical implantation of the transmitter. The electrocardiogram electrodes were run subdermally and one sutured at the lower end of the sternum and one near the neck." As further expected, the most marked departures from the norm are

those of 5665, the movie maker, who extends himself in a slangy, humorous way to emphasize the killing of animals:

One good thing is when we got done with the seals, although in the adults, we of course had to grind them up, destroy them, and grind them up, the internal organs, put 'em all through a great big grinder, because you're only counting 100 or 200 gr. of an enormous 500 k. animals and then mixing all the tissues and then take aliquots of the mixed ground tissues. Indeed, 2 fetuses were delivered perfectly well after the diving. Next slide. And of course they all had their arterial lines in place for subsequent sampling.

One who fails to listen carefully can "listen in" some concern for the neonates, whereas the "one good thing" is that their equipment is in place so that, after subsequent experiments, they can follow their mothers into the grinder.

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THE NOUN ICE

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The phrase break the ice is said to have both a literal and a figurative meaning. Dictionaries usually list the latter as a set phrase, and in his Idiom Structures in English (1972, 311) Adam Makkai calls it an idiom. Sentences (1-9) are examples of the figurative use; it occurs both actively and passively:

1. Notice how frequently jokes are used to break the ice at parties. (Robert F. Wilson)
2. And he led the conversation around to the lovely palm trees which nodded outside the window: a conversational turn which broke the ice and won the admiration of the other visitors. (Lawrence Durrell)
3. I gave her tea, with milk and sugar and tried to think of something to say. Lovell broke the ice by asking me if I didn't think her hair was beautiful. (John Cheever)
4. The awkward silence of strangers' first encounter prevailed. Then one man mumbled, "Used to watch my grandfather make brooms. Only he used a different kink of contraption." The ice was broken. (Karen Lingo)
5. The shyness of the young islanders was rapidly giving way to easy comradeship with the visitors. The American boys seemed to know by instinct how best to break the ice. (James Norman Hall)
6. On the other hand, when the ice was once broken and the barriers down, the President's charm was unusual and almost unfailling. (Gamaliel Bradford)
7. Held scoreless and hitless until the fifth inning, the Mariners broke the ice on home runs by Willy Horton and Leon Roberts and went on to beat the Rangers... (Sporting News)
8. That breaks the ice. Rich Yonaker gets the first basket of the second half. (Jim Thacker)
9. Now that Kurt Thomas has broken the ice -- giving the United States its first gold medal in world gymnastics in nearly half a century -- he feels his international career is just beginning. (UPI)

Makkai claims that the definite article is mandatory in this phrase, but sentences (10-12) show that it is not:

10. His cheery Creole broke what little ice we encountered, after which conversation flowed like wine... (Kenneth MacLeish)
11. When such results occurred, he always made use of them to break any lingering ice, and establish communication. (Archibald M. Hill)

DICTIONARY ABBREVIATIONS

<u>W3</u>	Webster's Third New International Dictionary (1976)
<u>WNWD</u>	Webster's New World Dictionary, College Edition (1962)
<u>FW</u>	Funk & Wagnall's New Standard Dictionary of the English Language (1963)
<u>OED</u>	Oxford English Dictionary
<u>RH</u>	The Random House Dictionary of the English Language, Unabridged Edition (1967)
<u>W&F</u>	Wentworth and Flexner, Dictionary of American Slang (1975)
<u>DU</u>	Partridge, A Dictionary of the Underworld (1968)
<u>DA</u>	Mathews, A Dictionary of Americanisms (1956)

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12. And your cold people are beyond all price
 When once you've broken their confounded ice. (Lord Byron, OED)
 Both Makkai and W3 give the figurative phrase the definition 'to make a beginning'. Sentences (7-9), especially, appear to support this definition, but it is too general: I have just made a beginning with this paper, yet it is not appropriate to say that I have broken the ice. Also, in (3) the conversation is delayed before starting, and in (8) the team goes several minutes before its first score. WNWD improves the definition, giving 'to make a start by getting over initial difficulties.' The "difficulties" are what the word ice designates; modifiers as what little (10) and lingering (11) make sense in this light. In dictionary definitions which note these difficulties, they are specified as formality, reserve, tension, aloofness, shyness, stiffness, awkwardness, and lack of acquaintance. This last is illustrated in (1) and specified explicitly in (13):
13. They nodded to each other by way of breaking the ice of unacquaintance... (Thomas Hardy)
 Our examples also illustrate shyness (5) and other possibilities: inability to talk (3,4), not being able to score (7,8), and not being able to win (9).
- FW calls these difficulties "restraints." In their definitions, dictionaries talk of "getting through," "relaxing," "penetrating," or "overcoming" these restraints or difficulties. As the phrase indicates, however, a better verb is simply break. Analyses which treat the whole phrase as a metaphor or idiom fail to note that break is a verb that takes a wide range of both concrete and abstract objects; sentences (14-23) show break in contexts very similar to those of figurative break the ice:
14. Now the emotions within Russ began to sort themselves out; he could feel that curious detachment breaking. (Ben Haas)
15. Early in the meal, Frank had broken the reticence he maintained with the family. (Herbert Wilner)
16. I ordered a bottle of wine and would have started some toasts, in an effort to break our sad reserve... (John Hersey)
17. ...once the initial aloofness had been broken the use of synthetic indigotin made strides. (E.J. Holmyard)
18. Because the sense of liberation came from breaking an acquired inhibition? (Marc Brandel)

19. ...[she] treated her son with a formal, icy politeness which broke sometimes to reveal a disappointment... (Catherine Gaskin)
20. Briskly, trying to break the inertia, I looked at my watch, and rose, saying, "By Jove! I'd no idea it was so late." (C.E. Scoggins)
21. When nothing had changed by the evening of the third day, I knew the impasse must be broken. (New Yorker)
22. We grinned at each other, relieved at the breaking of the tension, its embarrassment to both of us. (Hollis Alpert)
23. I would have liked to break the silence but couldn't think of anything cheerful to say. (James Herriot)

From this evidence, I conclude that break here is the same word which occurs widely elsewhere; it is only the noun ice which is figurative. The phrase is thus not an idiom. I conclude also that the inherent meaning of the phrase is 'the ending (i.e., breaking) of a certain type of difficult situation (i.e., the ice)'; the meaning of 'making a start' is inferential. This start results in an improved relationship between people, improved ability to converse, or an improved ability in other activities such as games; but these improvements are also inferential meanings. As I argued in my paper (Ruhl 1979) on phrases such as hit the road and hit the bottle, inferential meanings can become more prominent than inherent meanings, and we must recognize this if we are to analyze correctly problematic phrases which appear to be idiomatic.

My conclusions draw additional support from the fact that ice has a meaning in other contexts similar to its meaning in break the ice. One definition of ice in W3 is 'the quality of being emotionally cold (as from formality, reserve, embarrassment, or hostility)'. This definition correctly notes that ice does not directly paraphrase formality, reserve, etc., but is rather a quality of feelings which are characterized in English by the adjective cold. In fact, to understand the figurative role of the noun ice in English, we need to see it as part of a semantic field centering on cold. To get the proper perspective, we must first investigate how the figurative meanings of cold relate to those of ice.

W3 gives several relevant definitions for cold, but they are poorly integrated. I propose that they be organized as follows (W3 definition numbers in parentheses):

24. A. very negative emotion, active
 1. feeling: fearful, renouncing
 2. affect: angry, hostile
- B. very negative emotion, passive
 1. feeling: frigid, inhibited (3b)
 2. affect: dispiriting, discouraging (5a)
- C. negative emotion
 1. feeling: isolated, reserved (3a, 3c)
 2. affect: chilling, unfriendly (3a, 3c, 5b)

- D. no emotion; emotion should be present
 - 1. feeling: apathetic, indifferent (3d, 3e)
 - 2. affect: stale, uninteresting (10)
- E. no emotion; emotion should be absent
 - 1. feeling: deliberate, sober (3f, 3g)
 - 2. affect: factual, impersonal (11)
- F. no motion or change
 - 1. feeling: immobile, dead (6)
 - 2. affect: certain, assured. (6, 14)

This organizational scheme is more suggestive than accurate. It overdistinguishes both in degree of emotion and in the split of feeling and affect; the latter distinction is, of course, rather strained in the last two major divisions. Many English words, such as angry and impersonal, do not clearly distinguish feeling and affect. Cold ranges over all degrees of negative emotion, so the distinctions of (A-C) are arbitrary; other words, such as impersonal, can also differ in emotional intensity in different contexts. W3 does not recognize the extreme range of (A), but the following data will illustrate it. It is best to view this scheme as a flow chart, highlighting certain points on a continuum. The crucial transitions are from (C) to (F). Negative emotions blend with another negative state, the lack of emotion when it should be present. This in turn blends with a state in which emotion should, ideally, not be present. Lack of emotion then blends with a lack of motion, a semantic unity reflected in the morphology of these two words and also in the meaning range of the verb move.

The following examples are ordered from (A) to (F); I have not tried to categorize them precisely because some of them could fall in several categories, thus showing that the scheme of (24) is rough at best. I have underlined words other than cold which reveal the emotional state. It must be kept in mind that cold does not gloss as 'angry', 'reserved', 'dead', etc., but rather describes a quality associated with these states. (Note also that emotions such as anger can be both cold and hot.)

- 25. I lay there in the dark, feeling the cold emotion of renunciation. (Floyd Dell)
- 26. But when my aunt asked me whether I could not manage a little more I refused with cold dignity. She did not insist. I carried my outraged feelings into the drawing room. (W. Somerset Maugham)
- 27. They talk, but only to make ill-tempered demands and cold refusals. (Lewis Thomas)
- 28. She took in the immediate scene with one cold glare... (William Faulkner)
- 29. His voice was cold with anger. (Harold Robbins)
- 30. Some people, like my sister Harriet, even found him cold. But I suspected that he was simply reserved, perhaps inhibited... (Louis Auchincloss)
- 31. He looked up at me with a cold annoyed stare. (Ursula K. LeGuin)
- 32. The cold implacability was still in his voice. (Harold Robbins)
- 33. Did I think I would be choosing, irrevocably, the cold loneliness of that afternoon if I went on? (Betty Friedan)

34. ...his small voice had been cold and full of authority. (Irwin Shaw)
 35. His face met hers, his face calm, all trace of the cold hardness gone. (Steven C. Lawrence)
 36. ...She looked at him, trying to appear a little cold or at least disinterested... (Theodore Dreiser)
 37. his cold, mean, selfish policy toward those whom he liked to segregate and hate as his enemies. (W.A. White, W3:3c)
 38. His voice was cold and expressionless. (Harold Robbins)
 39. he finds the people of his village cold to this noble and time-honored sentiment. (Arthur Knight, W3:3e)
 40. the cold, correct, regular, narrow poetry of Pope. (A.L. Kroeber, W3:3a)
 41. a cold traffic of minds and ideas and, for all the melodrama, not a clash of living people. (J.R. Newman, W3:10)
 42. competing on a basis of sheer cold efficiency. (T.W. Arnold, W3:11)
 43. a cold calculated punishing punch in the mouth. (John Steinbeck)
 44. it is spread with cold deliberation to other countries. (Meyer Berger, W3:3g)
 45. She was cold sober... (Peter Taylor)
 46. ...the best way for him to counterbalance the cold, almost inhuman objectivity of his nature... (Louis Auchincloss)
 47. I was pretty pleased with myself, but of course a cold assessment of the case would show only one thing -- that I had done hardly anything right from start to finish. (James Herriot)
 48. the cold neutrality of an impartial judge. (Edmund Burke, W3:3d)
 49. In cold fact the hula of the Old Way was a shambling, dreary, and very boring dance... (Eugene Burdick)
 50. Remember the good old days when banks were cold and impersonal...? (Erma Bombeck)
 51. lay cold in his coffin. (Margaret A. Barnes, W3:6a)
 52. the actors had their lines cold a week before the opening night. (W3:6b)
- The scheme of (24) can serve also as a guide to the range of figurative ice, with a slight alteration that ice can perhaps indicate more severe negative states than cold:
53. In her womb was ice of fear... (D.H. Lawrence)
 54. I felt that ice in my guts again, the dread I'd felt all afternoon. (James Baldwin)
 55. Kid Sampson's cry turned Yossarian to ice. "Is something the matter?" he [=Yossarian] yelled in horror. (Joseph Heller)
 56. Very different from the terrifying menstrual ice of her rages... (Saul Bellow)
 57. The ice of his manner betrayed his dislike of the new ambassador. (RH)
 58. Somewhere beneath the load of the emotion-freezing ice which my life had conditioned my brain to produce, a spot of black anger glowed... (Ralph Ellison)

59. "When you're with her," Yolles said, "you sit there wondering what's under all that solid ice. Is it a woman? Does she feel about the way her husband died?... No warmth, no tears. Just her head tilted up, that way she has, and that haughty look she gives you." (Arthur Haley)
60. ...the light from the windows gave their faces the look of inimical coldness, of ice. (James McCormick)
61. I made a joke about linguistics, and ice fell on the meeting. (H.A. Gleason, Jr.)
62. I may not have ice instead of blood in my veins the way Croft has... (Norman Mailer)
63. He arrived at ideas the slow way, never skating over the clear, hard ice of logic... (Ursula K. LeGuin)
64. It was the knowledge of that I, not safe in her head, but in her gut, the ice of its inevitability, its no way back... (Mary Lee Settle)
- The I in (64) is a noun, modified by the demonstrative that. In (61), the joke produces a negative reaction that ends the conversation. We can include examples of figurative ice-cold:
65. Even though the sun was beating down I felt ice-cold. I guess I was in a state of shock... (H.R. Haldeman)
66. ...he was a total expert who only dealt in established clinical fact and ice-cold logic. (Bill Knox)
67. The nihilist now appears as an ice-cold business conspirator... (Michael Polanyi)
68. Then their shooting, which had been near perfect, went ice-cold... (AP)
- Alternatively, we can say in (68) that their shooting went "dead." The adjective icy shows the same range:
69. His icy terrors were his own. (Harriet Frank, Jr.)
70. ...[I] froze in icy shock against the wall... (George MacDonald Fraser)
71. An icy tentacle of uneasiness wrapped around him. (Clive Cussler)
72. Art warms even an icy and depressed heart... (Alexander Solzhenitsyn, tr. by F.D. Reeve)
73. "I?" she repeated in tones of icy outrage. (Gordon R. Dickson)
74. ...looking me up and down with an icy loathing. (Marjorie Kinnan Rawlings)
75. ...the final escalation of a guerrilla war of raw nerves and icy glares. (Joe Eszterhas)
76. ...Griscom replied with icy irritation. (James A. Michener)
77. Koplin shot Donner a disapproving air, his tone icy. (Clive Cussler)
78. The voice throbbed with icy authority. (Ralph Ellison)
79. ...Howe, whose head had become icy clear in the nonsensical drama... (Lionel Trilling)
80. His lips refused to move; his tongue felt icy and inert. (Richard Wright)
81. Or to be cold and clean. This has the advantage of icy, barren virtue. (Daphne Athas)
82. ...Judy rose with perfect, icy grace... (Kristin Hunter)
83. Maybe each commonplace reassurance I gave her helped temper the icy wind of truth. (Samual Yellen)

Physical ice is 'frozen water'. Significantly, the verb freeze and related forms cover the same semantic range (also see (70)):

84. The animals froze, horrified. (Walter Wangerin, Jr.)
85. "What if," someone asks a ranger, "a climber freezes in fear and can't continue?" (Robert Paul Jordan)
86. Softly, frozen with anxiety and fear, she turned the door handle. (D.H. Lawrence)
87. While she spoke, Dr. Beamish's geniality froze. He looked at her with hatred, not speaking. (Evelyn Waugh)
88. They froze helplessly, rage and hostility seething through their every pore. (Clive Cussler)
89. Ashley Fleming's face froze in a mask of indignation... (Clive Cussler)
90. And the pain frozen on the faces of those who have attended kindred dead. (William S. Ellis)
91. The sight that greeted them stunned each of the men into frozen positions... (Thomas Page)
92. ...a silent frozen loneliness takes over. (Katherine Kuh)
93. Then she tells me a story which almost does freeze my blood. (Lewis Nordan)
94. ...this feeling of being suddenly frozen, this dryness inside his mouth came from facts, not little-kid fancies. (Paul Darcy Boles)
95. Mr. Dumbleby's big frame froze suddenly into immobility. (James Herriot)
96. If we leave aside those formerly empirical sciences whose theories have frozen into a definite mathematical form. (Stephen Toulmin)
97. ...the printed word was inflexible, permanent... This embalming process froze language... The word became a static symbol... (Edmund Carpenter)

Both ice and freeze stress category (F), where things are immobile, solid, and static.

The following examples expand the semantic field with words morphologically related to those already noted and also other words having some sense of 'cold'.

98. I shook hands with him rather coldly. I wished I had not come. (W. Somerset Maugham)
99. We can afford, emotionally speaking, to be coldly objective in judgments of athletic ability... (John Gardner)
100. ...I was careful to smile with the right degree of coldness so that she would realize I had survived her attempts at interference with ease and despised her for prying into my personal affairs. (Susan Howatch)
101. an icily unenthusiastic audience. (Mollie Panter-Downes, W3)
102. ...[my greetings] were met by the iciest of stares. (Jonathan Evan Maslow)
103. I felt a chill of horror. (James Herriot)
104. Laura feels a slow chill, a purely physical sense of danger... (Katherine Anne Porter)
105. ...he continued in such a dead, equable tone that she felt a slight chill fall over her shoulders. (Joseph Conrad)
106. He showed a rather chilling detachment... (Louis Auchincloss)

107. Death's icy chill penetrated through her fingers... (Isak Dinesen)
108. And now Peter was chilled by despair... (Ron Faust)
109. perceptibly chilled by the ice in his voice. (W3)
110. ...he had wiped out the icy discipline of a lifetime... (Ron Faust)
111. A pair of cool, unemotional eyes considered Thane thoughtfully for a moment. (Bill Knox)
112. I displayed a cool indifference, freezing them out of my life... (Cathy Mitchell)
113. But when I run into her, most of the time she's quite frosty. (Nancy Hunt)
114. The name was a sharp cut, ice cold. It was incredible how, after all these years, the memory of Cavanaugh and his frigid rejection of The Last Magic still had a power to chill him. (N. Richard Nash)
115. "He bowed frigidly but did not stop to speak to me." (Lawrence Durrell)
116. "Will you be so kind as to explain to me what this is all about?" he then said, with what frigidity he could muster. (Conrad Aiken)
117. The Tsar had received him with glacial frigidity... (George F. Kennan)
The verbs melt and thaw also are in this figurative field:
118. "Our job, and the job of all small countries, is to melt the ice between the superpowers..." (John Darnton)
119. I thawed out my fear... (Hunter Kay)
120. And, with that sound, my frozen blood abruptly thawed... (James Baldwin)
121. Austin believed that this slovenly imprecision had frozen philosophy into an unscientific non-cumulative state. He wanted to "thaw the ice of ages, by unflogging application of the intellectual, and make philosophy a cumulative science." (John Stewart)
122. thawed a little of the ice that held his lady's heart. (Robert Murphy, W3)

This field of meaning also includes the figurative use of flow, which stands for life and change, in contrast to the solidity and deadness of ice.

Ice is a crystal; the noun ice is used for other crystals, especially those which reflect or gleam. Ice can mean 'diamonds' (123-25); emeralds are called green ice (WF). The appearance of diamonds can suggest ice (126), as can also glass (127-30); ice can in turn suggest diamonds and crystals (131). (Strictly speaking, glass is not a crystal, although it can be treated as such.) The associations lead to further figurative use in (132):

123. fenced the ice for the gang. (W3)
124. "An old pal...is bringing me a two-carat hunk of ice." (Major Hoople comic strip, WF)
125. "Along comes a guy...a piece of ice in his tie that made Tiffany's front window look like a hardware exhibit." (George Bronson-Howard, DU)

126. ...diamonds lay scattered in all directions, glinting with a million tiny chuckles of icy laughter. (Richard Wright)
127. ...a glittering icy chandelier for the dining room... (Anne Tyler)
128. Clawing at space, he seemed to suspend there for a moment in mid-air, before gliding with white floundering legs and arms across the hood of the car toward me, shattering the wind-shield in any icy explosion of glass. (William Styron)
129. "That's what give Waterford [glass] its weight -- and its icy sparkle." (John Scofield)
130. ...the glass [of the lamp] is thick and clean, with icy lights in it. (James Agee)
131. "All the trees are sparkled with diamond icicles, and crystal prisms on the shrubs." (V.C. Andrews)
132. His sharp glance had a glint -- icy; crystal -- of humor. (James Gould Cozzens)

(DU also cites ice palace 'a high-class brothel'. According to Godfrey Irwin, it is "from the many mirrors and cut-glass chandeliers found in these resorts.")

The most concise definition for "literal" ice is 'frozen water'; other meanings are usually called EXTENSIONS of this BASIC meaning. Assuming that this interpretation is roughly correct for ice, I propose the following analysis. I adopt Bolinger's observation (1965, 567) that a word carries as part of its meaning a "something like" extendibility; I will call this the FIGURATIVE PRINCIPLE. This principle defines THE AXIOMATIC SHAPE OF LEXICAL MEANING -- axiomatic, because a grammar incorporating it will more fully, accurately, and concisely describe lexical meaning. This principle assigns to each word the shape of a CORE and a PERIPHERY, either of which can be changed, and be in the process of change, by certain general principles of restructuring. The CORE is that aspect of meaning from which other aspects of meaning, the PERIPHERY, can be derived most adequately by general principles. The CORE is the most unpredictable aspect of meaning, that which must be learned outright. The PERIPHERY is not completely predictable, and may also be learned outright, but it should be possible for a language learner to relate it by general rules to the core.

Although they are not necessarily identical, principles of change can be related to principles of structure. One principle of change is GENERALIZATION, by which a word acquires a wider range of meaning. If there is FULL GENERALIZATION, then a word has a new core; if there is PARTIAL GENERALIZATION, a word has a new periphery. The "extended" meanings of ice can be described as partial generalizations from its core. Assume that the core meaning is 'frozen water'. 'Water' is partially generalized to 'chemical element or compound' so that ice can describe the frozen states of hydrogen and of carbon dioxide. 'Water' is also partially generalized to 'chemical mixture of something with water' so that ice can describe frozen confections such as icing and ice cream. Obviously, these are partial generalizations because they do not apply to all elements, compounds, and mixtures; if they did, 'water' would be too specific to be in the core.

The definition 'frozen water' has certain implications. If something is water, then it is a chemical reality; it is on this semantic implication that the partial generalizations already noted are based. If something is water, it also is capable of flow, of internal motion. In contrast, if something is frozen, it is cold and solid; if solid, it is hard and internally motionless. Also, if something is physically cold and solid, it can be physically perceived as cold and solid. (Some of these implications are not necessary, but only stereotypic.) On these implications, other partial generalizations can be based.

'Cold' may more precisely be 'very cold'. Icy and ice cold can describe some temperatures of water, so they do not necessarily imply '32° or less', but rather something (felt to be) close to that. If we assume an implied core meaning for ice of '32° or less cold', then the meaning of the derivative icy is a generalization to a wider range of temperatures. We can alternatively assume that ice itself has generalized its implied temperature. The latter possibility reminds us that the meaning of a word is not necessarily determined by the properties of its real world referents.

The figurative field involving cold, freeze, and ice is additionally conditioned by a widespread pattern of generalization in which the physical is fully or partially generalized with the psychological. This is one of the patterns described by the term METAPHOR. (Metaphor can be defined as 'a type of partial generalization in which the two specifics are felt to be somewhat remote and are generalized by a less than obvious common property'.) In particular, physical sensations generalize with psychological sensations. With the word cold, generalization is almost complete. It is important to see that even though physical and psychological can be distinguished in words, reality is often indeterminate, and other words may fully conflate them, like the word sensation itself. Cold has fully, or almost fully, generalized in the pattern sketched in (24), conflating lack of emotion and lack of motion. Even though motion and emotion can be distinguished (by those words) they are unified in cold. People who are called cold are also described as hard, unmoving, stopping all human "flow"; the transfer of properties from physical to psychological is quite extensive. If the generalization is full, then the core meaning of cold does not specifically include 'physical'. Ice is not as fully generalized as cold, perhaps because it has a more definitely perceived referent, but it nevertheless may be heading in that direction.

Thus far, the meanings involved in our partial generalizations have included only the semantically necessary 'frozen water' and its implications. If we so desire, we can thus argue that these generalizations are based on semantic knowledge, not pragmatic, on linguistic knowledge, not knowledge of the world. But ice 'diamonds' is more problematic for those theoretical distinctions. If something is (physically) frozen, it is a crystal; however, the impetus for generalization seems not to be that ice and diamonds are crystals, but that both of them (and also glass) are colorless, translucent, and capable of shining or glittering. These are properties shared also, under certain conditions, by water, as (133) suggests:

133. There, in fact, stood the four glasses, brimful of this wonderful water, the delicate spray of which, as it effervesced from the surface, resembled the tremulous glitter of diamonds. (Nathaniel Hawthorne)

'Shininess' also shows up in ice plant, a plant so called because its leaves glisten (W3). Should these properties be part of the definition of ice? These data question whether it is possible to clearly distinguish linguistic and non-linguistic knowledge.

Additionally, ice is brittle, a property implied in the figurative use of the phrase (skating) on thin ice (134-35). Thin can be modified by very (136). The figure can be varied structurally (137), and it can be extended (137-8, 140). A word with the same import as thin can replace it (139-40):

134. ...I nevertheless persisted in the practice of skating on thin ice. (Bertrand Russell)
135. For a few days, Bruce and Ellen skated on thin ice, each being overcareful not to aggravate the other. (Dorothea Bennett)
136. I was on very thin ice and I backed away a little. (Ross Macdonald)
137. "We had better not rush things at this stage. The ice gets thinner as we get farther out, you know, and the shore is less easy to reach. I've a feeling we ought to play doubly safe." (Helen MacInnes)
138. "We've skated on thin ice for so many years. Colonel, this is going to break!" (Zane Grey)
139. His mind skated on the brittle ice... (Normal Mailer)
140. "It seems the widow didn't receive all she was entitled to," Donner said, skating onto unsure ice... The ice parted and Donner fell through. (Clive Cussler)

This phrase suggests that 'brittle' should be part of the meaning of ice. But it can be argued that worldly knowledge is more operative here, because this figure, unlike break the ice, really does involve the whole phrase. Arguments can be made both ways. Ice appears to have a figurative meaning, as (140) shows, based on 'solid', suggesting some certainty, something relied on; the preposition on could be paralleling its use with rely. Thin or a similar adjective must occur, but thin has an abstract meaning, and thus can independently modify a figurative ice. On the other hand, the figure seems to invite expansion, to a much greater extent than I have found with break the ice, and this suggests that it is still a figurative phrase -- or more precisely, considering (137), a figurative scene. Dictionary definitions associate this phrase with dangerous situations involving risk; this meaning is another metonymic inference. But other inferences are possible: (134) intends that by courting danger Russell was being intellectually daring, and (135) intends that the two people are being very careful AS IF there were some danger.

Even if on thin ice is a set phrase, it is not an idiom, because its words can be independently accounted for and have similar meanings elsewhere in English. The same point applies to cut no ice and (put) on ice, which are also sometimes listed as idioms. The first (141) has the variant cut little ice (142);

other modifiers with similar import are also possible. Cut, like break, can be interpreted abstractly; ice seems limited to a range of 'solid resistance'. The phrase metonymically implies that there is no influence or success.

141. That argument cuts no ice with Bavas. (Norma Quarles)
142. The eight New Hampshire delegates would cut little ice at the Republican convention. (Time, DA)
(Put) on ice is glossed in many ways, including 'in reserve' (143), 'in safekeeping' (144), 'in jail' (145), 'in abeyance' (146), 'assured' (147), and 'dead' (148):
143. kept the invention on ice for 10 years. (W3)
144. put you on ice quietly until they've had time to settle up their affairs. (Dorothy Sayers, W3)
145. on ice pending his appearance in court. (Front Page Detective, W3)
146. Wilde, with his galloping sense of self, an Attila of the drawing-room, kept his heart on ice and his speech on fire. (Robert Mazzocco)
147. with their lead they had the game on ice. (W3)
148. Potter said irritably, "Jesus Jenny, Phil, he ain't dead. You're talkin' about him like he was on ice." (Paul Darcy Boles)

These glosses are too specific: ice here has the sense of 'lack of motion or activity'; the glosses are pragmatic specializations. Both literal and figurative senses metonymically imply 'preserve'. The figurative phrase may operate as a unit, especially if the on has no motivation except by reference to the literal phrase. But the sense of ice is consistent with what we have seen already.

If we want a clear example of a whole phrase being figurative, we can cite (150):

150. In general he was as independent as a hog on ice. (Gerald Carson)

It is tempting for us to think that our knowledge of semantic data is quite extensive and that our methods of semantic analysis are sufficient to the task. My feeling is that both are very rudimentary. Dictionaries provide data, but it is poorly organized, and often ignored by intuitional linguists. Poorly defined notions as IDIOM and METAPHOR do little more than put a tag on puzzling or inconvenient data. In addition, they are heuristically disastrous, labeling data for the purpose of ignoring them, an attitude that enables us to fashion our own abstract systems but leaves human language far behind. Detailed analysis of words like ice can serve to show us both our present limitations and future possibilities. Of course, my points will not cut very much ice with some linguists, but for others I hope I have broken some of the thicker ice of our ignorance.

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SLANG, PRODUCTIVITY, AND SEMANTIC THEORY: A CLOSER LOOK

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In my 1979 LACUS paper I presented a wide range of data from a corpus of college slang to illustrate the intricacies of motivation in productive processes which should be accounted for in semantic theory. I argued that the data are systematically motivated, but by a range of factors which are not part of current synchronic semantic theory: factors of "sense," such as generalization, specialization, metonymy, metaphor, and irony; factors of "form," such as clipping, acronymy, rhyming, and mock dialect pronunciations; and factors of "culture," such as TV shows, popular music, and games.

The 1979 paper was a broad survey of the relevant data; this paper provides additional examples and discusses more fully the theoretical implications of these data. My concern is with motivation: where in a theory of linguistic ability can we account for the connections, some of which are far-ranging, that motivate these data? To illustrate my points I will use the slang of the TCG (True Carolina Gentleman), who is dedicated to the three B's: basketball, booze, and the gentleman's grade B. Consider first some expressions having to do with basketball: shoot some B-balls, shoot some hoop, shoot some jays, and shoot some rock. These all refer only to shooting baskets or at most to informal or pickup games; players in ACC games are not shooting some hoop.

These expressions are obviously related, all referring to the same activity and all containing the verb shoot, but the details of each expression are complex. B-ball is a partial acronym of basketball, the shortened form heightening the alliteration. Hoop is a metonym, referring to part of the equipment. Jays is a metaphor for the shape of the ball's path or, perhaps, an acronym for jump shot that has been generalized to any type of shot. Rock is hard to classify; I think it comes from children throwing rocks through the basket when they don't have a ball. B-ball and jay are count nouns, but in these expressions hoop and rock are mass.

What abilities must someone have both to create such expressions and to understand them? It is not necessary for a speaker to be able to analyze the motivation of a slang expression to use it. For instance, a speaker might know the reference to basketball but might not recognize why jay is appropriate in shoot some jays; or two speakers might disagree about the motivation of jay, one thinking it a metaphor and the other thinking it an acronym. But often people recognize immediately the aptness of a slang expression, as is probably the case with shoot some hoop for

anyone who knows anything about basketball.

Where in a general theory of linguistic ability do we account for the fact that a speaker can create a form and a hearer readily guess its meaning? Obviously someone who understands shoot some hoop and shoot some jays has some acquaintance with the game of basketball; a person who has no knowledge of the game would probably be baffled by either. The natural response might be to put the ability to create and understand such expressions outside of linguistic theory.

Such dismissal could invoke one of three sets of distinctions: diachronic/synchronic, performance/competence, or pragmatic/semantic.

Many of the productive processes at work in slang, e.g., generalization, specialization, amelioration, pejoration, are the same as historical processes, and synchronic semantic theory does not aim to account for historical change. However, to view the creation and use of slang as a kind of accelerated diachronism is to misrepresent its most obvious characteristic--its synchrony, its currency, the brevity of its life in comparison with the general vocabulary. The creation of slang is a synchronic ability. The speaker who first said shoot some hoop and subsequent speakers who use it and understand it know the two meanings of hoop and make the metonymic connection. With a diachronic process speakers need not be aware of metonymic connections--sometimes even in the face of formal identity. Some college students, for example, are surprised to learn that the color term orange has generalized from the fruit. Whereas that connection seems obvious to me, I see no reason for speakers to suspect a relationship between, for instance, the draft in draft beer and in register for the draft. That knowledge is historical. But the connection between the game of basketball and hoop is synchronic. To rule slang beyond the bounds of synchronic theory because it uses the same processes as historical change amounts to ruling out all creativity from synchronic studies.

The production of slang might be ruled out as a factor of performance rather than competence. Competence-based theories generally posit an ideal speaker-hearer in a homogeneous speech community. Such an approach immediately factors out slang, which serves the interests of specialized groups. However, the ability to produce and understand slang is a part of every speaker's competence, not just part of the competence of those who happen to belong to a few groups, for the productive processes at work in slang are the same ones at work in language in general. A speaker who cannot handle the strategies of slang (not particular vocabulary items) cannot handle his or her language.

The third way to rule slang out is to assign it to pragmatics rather than to semantics. Any linguistic ability which relies on knowledge of the world can be termed pragmatic. Strictly speaking, then, any type of indirection (metaphor, metonymy, irony, etc.) is pragmatic because it relies on knowledge of real world particulars. If a speaker does not have to know basketball to know English, then his or her knowledge of basketball is pragmatic and does not belong

in semantic theory. With shoot some hoop, shoot some jays, and shoot some rock a pragmatic explanation might be adequate. Two more basketball expressions¹ might likewise require such knowledge of basketball that a pragmatic explanation might suffice. In shoot a brick, brick is a metaphor for 'a poor shot, usually off the rim'. A player who 'shoots the basketball well' shoots the eyes out of it. Perhaps eyes is an allusion to bull's eye; a baseball can also be said to have eyes. In slang out is a common aspectual particle (freak out, pig out, nap out), and generalized it occurs frequently (cool it, pickle it, bag it). Shoot the eyes out of it in addition presents an image of DESTRUCTION and as such belongs to the set of terms in that semantic field.

The data so far examined lead to the possibility that the motivation for slang is pragmatic rather than semantic. However, the following data seem to call for a semantic explanation. A large portion of the terms for drinking, drugs, and test taking are linked to each other in ways that are persistent and productive, not at all random and idiosyncratic. These items loom large in two semantic fields, which appear to provide a source for their proliferation. Making sense of the connections requires only the slightest knowledge about the effects of alcohol and drugs and about test taking. But it does require knowing that English tends to interpret these three subjects hyperbolically. This is linguistic knowledge, not knowledge of the world.

First I will examine the role of semantic field in this network of connections.

About 100 items in the corpus refer in general usage to kinds of injury, harm, decomposition, or incapacitation--a semantic range which I shall call DESTRUCTION. Among these are terms like abuse (n.), break up, bust ass, crack up, crash-and-burn, fall off of the roof, get bent, hack off, hurt me, shoot the bull, split, stomp, twisted, and wham.

Some forty-four of these pertain to drinking, drugs, and academic success, and a handful refer to defeat. The remainder of the items in the semantic field DESTRUCTION are not readily classifiable into subject areas, e.g., crunch 'females', eat up 'fatigued', eat your heart out 'be envious', hit one's head on the ceiling 'make a mistake', rip the rug 'dance', ripped off 'cheated', trash your act 'stop'.

About one-fourth of the DESTRUCTION terms pertain to drinking or the effects of drinking: blasted, blind, burnt out, ripped, stoned, wasted, wrecked; brawl, blitzed, blitzkrieged, blown out, blown up, bombed, juiced, messed up, polluted, pound (a few beers), ripped out of one's gourd, shoot a beer, smashed, suck out a few heads, toasted, tore out of the frame, trashed, whipped, wiped out.

The first seven of the above drinking terms are also used to describe the effects of taking drugs. Other drug-related terms in the field of DESTRUCTION are brain is fried 'incoherent because of drugs', busted or popped 'arrested', crash 'withdraw from drugs', killer weed 'especially potent marijuana', shoot 'inject drugs into the veins', shotgun 'procedure in which one person puts the lit end of a marijuana cigarette in his or her mouth and exhales, thus

sending a stream of smoke which is inhaled by another person'.

The term wiped out can refer to either alcoholic or academic DESTRUCTION. Past participles blitzed and bombed mean 'drunk', whereas blitz means 'to make an A' and bomb 'to fail'. Other DESTRUCTION terms pertaining to performance in school work are blow it out, burn, destroy, gunner, kick someone's ass, kill, punch out, smoke, and smokin'.

This semantic field appears to offer producers of slang a framework for the proliferation of vocabulary when talking about drinking, drugs, and school work. Persons who have over-indulged in alcohol or drugs are pictured as the objects of various kinds of destructive processes, e.g. heat (blitzed, burned out, toasted), explosion (blasted, blown out, blown up, bombed), breaking (ripped, smashed, tore out of the frame, wrecked), etc. Not surprisingly, most of these terms are past participles in form and syntax: "He was wiped out (by two beers)." In the subject area of school work, the DESTRUCTION terms can indicate either failure or success. "I wiped out on/ bombed/ bombed out on that last test" means 'did poorly'. "I blew it out on/ blitzed/ burned (up)/ destroyed/ killed that last test" means 'performed well'. In other words, the test destroys the taker, or the taker destroys the test. Although to smoke a test means 'to do well', a test that is smokin', or is a smoker, is 'a difficult one'--as is a test that kicks someone's ass.

A single type of destruction, for example, burning, can be used with various referents in a predictable range of forms: verb, verb+particle, past participle, past participle+particle. Burn 'to display a high amount of intelligence', "I burned the last test."; burn (up) 'to put in a complete effort or to do fast', "I really burned (up) that food."; burn for 'to set all one's energies towards a specific goal', "He'll begin to burn for exams after Thanksgiving."; burned 'cheated', "If she keeps disagreeing with the professor she's going to get burned."; burned/burnt out 'in a stupor because of fatigue, alcohol, etc.', "I feel burnt out and exams are still two weeks away."

The use of a semantic field such as the one just examined for the motivation of terms for a given subject is undoubtedly conditioned to some extent by the culture of the speakers. The point is that once a concept is expressed in the vocabulary of a given semantic field, that field provides a related set of vocabulary items which are readily available, with some innovation and alteration in form, for use in expressing related concepts. A glance at the list of "Synonyms for Drunk" in Wentworth-Flexner² shows many more items in the semantic field DESTRUCTION not occurring in my corpus: battered, clobbered, damaged, fractured, gassed, hammered, melted, paralyzed, sawed, shot, wilted, etc.

I have just looked at a single semantic field, DESTRUCTION. I will now examine the subject area 'drunk'. A tally of the terms in the corpus for 'drunk' shows that about one-third fall into the semantic field DESTRUCTION. Of these, seven also indicate the effects of drugs. The most obvious characteristic of the items pertaining to drinking is their overlap with drug terms. Twenty-

four terms have both referents. Of these, seven are recorded in Wentworth-Flexner with both senses (blasted, get a buzz, gone, high, stoned, wrecked, zonked), two with only the alcohol sense (blind, buzzed), and three with only the drug sense (burned out, flipped out, wasted). Twelve are recorded in neither sense (crispy, droned, ethereal, fucked up, get naked, get small, looney, out of here, out of it, ozone ranger, ripped, zooed). At least four of the terms meaning 'suffering the effects of alcohol or drugs' are in the semantic field I call DETACHMENT FROM THE WORLD--ethereal, out of here, out of it, and ozone ranger.

Some thirty-five additional terms refer to alcohol but not to drugs. Of these, one, blown out, is recorded in Wentworth-Flexner with a drug-related meaning but not an alcohol-related one.³ Some of these are worth noting for the characteristics of slang which they exemplify. Gonzo is culturally determined, from "The Muppet Show." Pied-out is a clipping from the old pie-eyed covert to a past participle and augmented by the particle out; nine-eyed, on the other hand, clips the pie- and substitutes nine-. Smuckered, snockered, and zoolooed are past participle coinages that conform to some of the phonological characteristics usually ascribed to slang.

The items which refer to the effects of drugs but not alcohol fall largely into the DETACHMENT field--cloud seeker, freaked out, in the ozone, mountain climber, space trip, spaced out, spacey, transcend. Another term, looped, is an old one for 'drunk' but in this corpus is used only in relation to drugs.

The corpus shows an unmistakable association between the effects of alcohol and of drugs. The semantic field dominant for alcohol, DESTRUCTION, gets extended to drugs, and the semantic field dominant for drugs, DETACHMENT, gets extended to alcohol. To complicate the matter of intersecting semantic fields even further, alcohol and drug-related terms both are extended to describe the condition of being out of touch with reality for any reason. The following need not imply the use of alcohol or drugs at all: airhead, blown away, burnt out, flipped out, freaked out, out of here, out of it, up in the ozone, space cadet, spaced, vegged, veggie. The newest member of this set, brought to my attention this spring (1980), is SSSSSS--a sound used to indicate that a person is behaving like an airhead.

Coherence among the terms for 'drunk' is also provided by form. One-half of the sixty items are past participles in form. Ten more are past participles plus a limited range of particles: out (blown out, bummed out, burnt out, flipped out, pied out, wiped out), up (blown up, fucked up, and messed up), and over (hung over).

The connections between the three subject areas and the two semantic fields are pervasive and productive. It is hard to imagine a speaker of English who would not make the connections. The fact that a hyperbolic interpretation is likewise pervasive and productive lessens the likelihood that the speaker is relying mainly on knowledge of the world. Thus it is hard to dismiss the ability to create and understand slang terms for drinking and drugs

and test taking as not part of semantics. Nevertheless, how can the grammar best account for such an ability? The semantic field DESTRUCTION does not necessarily imply 'drunk', because not every DESTRUCTION term means 'drunk'. But any DESTRUCTION term might mean 'drunk' tomorrow. Conversely, not every term for 'drunk' pictures DESTRUCTION, but the chances are that the next new one will. The connection is possible, perhaps even probable, but far from necessary. It is this combination of uncertainty and probability which makes a pragmatic explanation attractive, but not adequate.

Obviously, I offer no answers. I point out that certain processes like generalization, metaphor, and metonymy and constructs like semantic fields are widespread and cannot be ignored in figuring out how slang works. They are easier to ignore in the general vocabulary. If we confine ourselves to examining only the more settled and established vocabulary of English--the so-called "standard"--we have eliminated at the outset spontaneity and short-lived change. In doing so, we run the risk of failing to recognize some of our most crucial and elementary linguistic abilities.

NOTES

¹Other basketball terms in the corpus are not pertinent to this discussion. Bottom! is an exclamation of approval specifically for a shot that does not touch the rim or backboard or generally for any great maneuver on the court. Kuzmaul!, which originated in one dorm and derived from the name of an NC State player known for his mistakes, is a response to either a bad shot or a good one. Although see you on the rebound means 'goodby', the allusion to basketball is evident.

²Wentworth, Harold B. and Stuart Berg Flexner. 1960. Dictionary of American Slang. New York: Thomas Y. Crowell. 2nd ed., 1975.

³Blown out also means 'embarrassed, shocked'.

WHEN ANAPHORS ARE METAPHORS

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Although metaphor has often been excluded from linguistics, it has demonstrably linguistic aspects. It will be shown to provide input for at least one grammatical rule, one that rejects sentences with a non-pronominal anaphor that contains an inappropriate restrictive relative clause (see Dieterich 1974 for details other than those provided here). As long as we make the distinction between the semantic and the pragmatic aspects of meaning, it is clear that metaphor must depend on the pragmatic as much as the semantic. This paper will examine a test case to show that the pragmatic interpretation of metaphors must enter into the linguistic derivation of sentences in discourse, and, more generally, that pragmatics interacts with linguistics.

One problem in dealing with the pragmatic/semantic distinction is that one has to have a full semantic system before one can be sure whether a meaning intuitively assigned to a sentence is constructed semantically or is based on world knowledge. A situation in which this problem is obviated was investigated by Carden and Dieterich (1976). Their paradigm is also useful because it does not ask the linguist or other introspector to examine the meaning or grammaticality directly (something we do not ordinarily do), but, rather, asks whether a discourse is coherent or not (something we consider more often). They found, for literal sentences, that the information in a restrictive relative clause must be semantically deducible from the previous discourse, that fairly likely (pragmatically calculable) information was not appropriate. This is seen in the discourses of (1), with second sentences having non-coreferent subjects being marked by *.

1) Two men were climbing Mount Rushmore when one fell off.

a) The man that fell off was taken to the hospital.

b) *The man that was injured was taken to the hospital.

Information that is not even calculable makes for even worse violations:

c) *The man that had red hair was taken to the hospital. The asterisks treat the continuum of acceptability as a dichotomy, but they will serve as indications relevant to placement on the scale. From the judgements of no-coreference, we can infer that the sentences are actually ungrammatical. Even though the subject noun phrase is not definitely an anaphor as a pronoun would be, the presence of a restrictive relative in this referring environment indicates that the subject is an anaphor. Lack of coreference

here, then, is as indicative of ungrammaticality as the lack of coreference in "John hit John" where both John's are intended to be the same. What sentence (b) shows, by its ungrammaticality in context, is that even though we would be more than willing to believe that someone who fell off Mount Rushmore would have been injured, that willingness is not sufficient to allow the information to be coded as a restrictive relative. If we were asked (after rejecting the sentence as ungrammatical) which man was taken to the hospital, we would probably say that "it must have been the guy that fell off." But that "must" in our statement indicates that we had to deduce the information, and thus that the speaker did not actually say which man it was. Here, as always the fact that we can deduce a meaning for a discourse that may be the one intended by the speaker does not entail that the understanding was constructed linguistically, i.e., that the discourse "meant" what we understood. In addition, it appears that written discourse allows more inferencing to take place, so that reading the examples is rather different from hearing them.

Two complications must be cleared up before we apply this paradigm to metaphor. First, there are cases in which the information that is encoded is not actually given in the linguistic portion of the previous discourse. For example, if two tourists had seen the accident of (1), one of them could later say (a) to the other without reiterating (1) itself. The accident takes on the status of "common background of the discourse," and thus is available for restrictive relatives. Of course, it will stay that way only for a short time; after even a day, it is likely to need expanding ("the man that fell off Mount Rushmore yesterday...").

The second complication is that pragmatics and semantics do not represent a dichotomy (as in the standard definitions), but rather represent two ends of a continuum. There are many elements of meaning that are of unclear status. Another sentence to follow (1) illustrates this:

- d) ?The man that lost his footing was taken to the hospital.

Losing one's footing is even more closely related to falling than is being injured. Thus the sentence with the restrictive relative clause is better here but still questionable, since we can certainly imagine people falling due to other causes, such as losing their grasp of an overhang. The more universal an inference is, the more like semantic deduction it behaves.

Restrictive relative clauses that contain metaphors behave in a parallel fashion.

- 1) Two men were climbing Mount Rushmore when one fell off.
- e) The man that flew was taken to the hospital.
- f) *The man that crumbled was taken to the hospital.
- g) *The man that blazed was taken to the hospital.
- h) ?The man that stepped on air was taken to the hospital.

These are possible metaphorical versions of (a), (b), (c), and (d) respectively. Notice that each succeeds or fails for the same reason as its literal counterpart. (The acceptability of the metaphor itself enters into the rating of acceptability, of course.) One aspect of falling is being (for however brief a

time) airborne, also a prominent feature of flying. Thus the output of a metaphorical interpretation rule (which will have to be a regulo ex machina for now) would resemble the semantic structure of fall in certain crucial respects and this allow the coreference to be maintained in (e). A reasonable interpretation of man that crumbled would be "man whose body came to have a little structural integrity," which is at least a hyponym of was injured. But even though that interpretation is relatively easy to make, it still fails to allow coreference, and the reason for this, it seems, is that the information is a pragmatic inference rather than a semantic deduction. The same can be said for (g), with this addition: Since the intended interpretation of the metaphor blazed is one that is not even a pragmatic inference from the previous part of the discourse, it is quite possible that someone hearing it would be unable to interpret it at all. Similar arguments account for (h).

If metaphors received only a pragmatic interpretation (i.e., a "likely" reading), we would expect all restrictives containing metaphors to be ill-formed. That is, we would expect them to behave like the other types of pragmatic inferences (such as (b)) and not allow the coreference to be established. In fact, (e), (f), (g) and (h) behave like the literal sentences for which they are metaphors. The process of metaphorical interpretation thus seems to construct semantic structures even if the process ("process" in a synchronic sense) is pragmatic. This should be no more surprising than that a phonological rule can take a phonemic input and produce a phonetic output. But this in itself does not guarantee that pragmatics and linguistics interact. What we need to show is that metaphorical interpretation must occur during a derivation rather than simply before or after it.

Gone are the days when everyone agreed on the nature of a derivation. In order to show how the phenomenon under examination is theory independent, three theoretical frameworks will be shown to give us the same result: that pragmatics interacts with linguistic derivation. Since the rule of grammar that allows or disallows coreference in these restrictives must work across sentences, some versions of theories, especially transformational, would reject this evidence a priori. However, the dissatisfaction with grammars that are limited to single sentences seems to be general enough that we can go ahead and give transformational explanations of this phenomenon.

The three frameworks that offer clear ways of handling the coreference rule are interpretive semantics, generative semantics, and stratificational grammar. Other theories, such as tagmemics and relational grammar, would, most likely, be able to handle this as well, but it is not clear what mechanism would be used. Tagmemics is perhaps too non-semantic; relational grammar (including arc pair grammar) is simply too underdeveloped.

The rule of coreference in restrictive relatives would be considered a filter in the semantic component of an interpretive semantics framework. Those sentences whose deep structure contained a restrictive relative would be subjected to this filter. Drawing on the semantics of the previous discourse, the filter would determine whether the information was allowable and the

sentence thus grammatical, or if it was not and the sentence ungrammatical. Now consider what would happen if the restrictive relative contained a metaphor. (Under the strictest transformational theory, all metaphorical sentences are automatically ungrammatical, but again there is mounting dissatisfaction with this position; the position itself is not a necessary consequence of adopting a transformational framework.) Either the selection restriction violation would be detected first, or the relative would try to pass through the filter first. In either event, the sentence would be rejected. But since (e) is grammatical, we know that cannot be the end of the story. Let us presume that, once rejected, a sentence is transferred to the metaphorical interpreter (This makes it likely that selection restriction violations are checked first.) If an interpretation can be constructed, we have a new semantic structure for the sentence. But, from (f), we know that not all of these new structures make acceptable restrictive relatives. In fact, the new semantic structures are subject to the same restrictions of deducibility as the originals. Here we have a choice; either we can postulate a pragmatic filter that mirrors exactly the semantic filter, or we can resubject the sentence to the original filter. Duplicating a semantically motivated filter wholesale in the pragmatic component goes against every definition of pragmatics. Pragmatics is, by definition, precisely that which semantics does not handle. However, declaring that the filter was pragmatic all along is unmotivated. The filter, far from being subject to pragmatic factors, does not allow pragmatic inferences; it depends solely on the semantics of the sentences and their discourses. The alternative is that the results of metaphorical interpretation, which is pragmatic, provide input to the linguistic filter.

The treatment that generative semantics would be likely to give is even more interesting. Since the deep structure (or "logical form") in this theory represents the most expanded form of the meaning, the interpretation of a metaphor must be in that structure. We have seen, from the parallelism of (a) and (e), that the interpreted metaphor must contain a semantic structure identical in important respects to the semantic structure of the literal paraphrase. (There must surely be additional meaning as well, namely the "affective meaning" that has concerned students of literature; but that is not semantic meaning.) This being the case, we have the following derivation of (a) and (e) in a generative semantics framework: First, the logical form that contains a restrictive relative clause is checked for coreference; sentences whose relative contains non-deducible information are marked as non-coreferent and perhaps ungrammatical. Then, for (a), "normal" (i.e., literal) lexicalization rules apply. For (e), the same logical form is given a different expression, necessarily via "metaphorical" lexicalization rules. Here again we have a choice. Either we can say that the metaphorical lexicalization rules are totally within linguistics, or we say that pragmatics interacts with linguistics within a derivation. The first alternative has been excluded without much discussion in this paper,

but it should be clear that taking that option makes the entirety of metaphorical interpretation of direct concern to linguistics. More importantly, those aspects of meaning (the affective) that linguists have excluded from analysis would then become a necessary part of logical form, since the metaphorical lexicalization rules would depend on that meaning. The second choice leaves the subject matter of linguistics more intact, but again forces us to allow pragmatics into linguistic derivation.

Despite the formalism that has been developed for both versions of transformational grammar, neither has a formal way of stating the sort of filter or lexicalization rule that we will need. In contrast, stratificational grammar has, by hypothesis, an adequate formalism, but it has not been tested against anything this complicated. On the level of generalization we have adopted so far, stratificational grammar is no more obscure than the others, and has the advantage of exploring the problem from both the speaker's and the hearer's point of view.

For the speaker, there are a number of considerations that go into choosing a sentence that has a restrictive relative clause. First, the head noun should be insufficient to determine the reference, otherwise the restrictive would be superfluous. This can only be determined by examining the content of the previous discourse as stored in the speaker's memory. Second, the information in the relative should determine the reference, and should also be semantically deducible from the previous part of the discourse. If the relative is to contain a metaphor, the motivation for that mode of expression should also be present; the motivation is little understood, so it will be arbitrarily labelled "desire for metaphor." Given all these conditions, realization will take place either through the well-worn networks of literal language, or through the innovative channels of metaphor. It may be the temporary creation of a network that would go on in metaphor that defines this a pragmatic rather than linguistic expression.

The stratificational description of the speaker's behavior is quite similar to the analysis given by generative semantics. The main difference is that stratificational grammar assumes that the semantic structures are generated by some cognitive capability that is under conscious control, i.e., that people speak sentences that express something they wish to say. Generative semantics takes a position that looks quite different but has the same result: It considers logical forms to be arbitrarily generated from an initial symbol via phrase structure rules. In either case, the linguist must decide which structure will show what he is interested in; neither approach is in a position to suggest how the structure actually comes about for real people. The difference is that stratificational grammar does not exclude such explanations a priori.

From this description, it seems that the speaker would always produce an appropriate restrictive, so there would be nothing for the hearer to do but interpret the sentence (including any metaphors that occur). However, it is not the case that speakers

always remember precisely what has been constructed by the previous discourse, and thus run the risk of uttering inappropriate restrictive relatives. The hearer, on the other hand, tries to set up as many actors in the discourse as are appropriate, and to attribute the proper actions to them. He must therefore check the information in a restrictive relative to see that it conforms to the requirements for coreference. In that respect, he is likely to mirror the interpretive semantic account by noticing selection restriction violations first, constructing an interpretation and then checking the resulting structure against the semantic content of the discourse to see if the coreference goes through. If it doesn't, the conversation may need repair. If it does, and there was a metaphor, then he has reached into the pragmatic component to give him the interpretation necessary for testing the linguistic content of the sentence. Once again, pragmatics interacts with linguistic processes.

There are more differences between the interpretive semantic account and the hearer's job in stratificational grammar than we saw between generative semantics and the speaker's side. First the hearer does not perceive deep structure directly, but must construct it. Even on the surface, he does not directly perceive the tree structure that some interpretive rules depend on. The rules that get the hearer from a string of phones to a tree structure are undoubtedly complex and make it appear that interpretive semantics is even less a model of the hearer than generative semantics is of the speaker. Stratificational grammar, it should be emphasized, gives us a framework for examining both speaker and hearer, but to date has been short on specific proposals.

In conclusion, we have seen that at least one rule of grammar requires the result of metaphorical interpretation as input. In any theoretical framework in which the distinction between semantics and pragmatics is made, this result forces a choice: Either metaphor is completely within linguistics (probably an insupportable claim) or else pragmatics interacts with linguistics and is not just an adjunct to it. (Any theory that denies the distinction between semantics and pragmatics would presumably be obligated to give a complete account of metaphor in any case, and so, essentially, would be taking the first option.) While this result will be no surprise to many, the dominant opinion in linguistics is that the separation can be made. This position stems to be sure, from the standard "subtractive" definition of pragmatics, but the definition must be revised. While it is obvious that there are some linguistic phenomena that do not interact with pragmatics, any absolute distinction will necessarily be artificial and ultimately misleading. Evidence from a variety of sources (language use, variation and dialect studies, language change) indicates that language is not a complete system. Its fringes interact with non-linguistic systems, and those fringes are quite large. Part of that interaction is seen in those constructions that are of indeterminate status in the language (see Whalen, in press b) and the gradual lexicalization of "dead" metaphors (see Whalen, in press a). Such evidence does not

compel linguists to become pragmaticists. It does compel them to modify their linguistic model to account for those aspects of pragmatics that enter into linguistics in significant ways.

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Appendix

The following discourses follow the pattern of the example in the text, and may be more acceptable to some speakers. Much variation in judgement has necessarily been glossed over.

- 2) Two cars were about to have a head-on collision when one went over the curb.
 - a) The car that went over the curb was a BMW.
 - a') The car that went off the road was a BMW.
 - b) *The car that hit a tree was a BMW.
 - c) *The car that had a sun-roof was a BMW.
 - d) ?The car that stopped was a BMW.
 - e) The car that hopped was a BMW.
 - f) *The car that hugged a tree was a BMW.
 - g) *The car that had a window in its head was a BMW.
 - h) ?The car that stopped breathing was a BMW.

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WORD ORDER UNIVERSALS AND SVO→SOV IN CHINESE

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I. Introduction

There have been claims (e.g. Li and Thompson, 1974; Tai, 1976) that the Chinese language has been changing from SVO to SOV in its basic order. Explicit in the claims are assumptions that during or even before the Early Archaic period (1500-1200 B.C.) the basic word order was SVO, that the basic word order of Modern Mandarin is SOV, and that for some reason the Chinese language has been changing unidirectionally and consistently throughout the 3000-plus years and that the process has not yet been completed.

In this paper, I will investigate the basis for these claims about the word order change, the problem of whether SOV should be considered the basic word order for Modern Mandarin, the arguments advanced for the causes for change, and the possibility of proposing some more realistic explanation for why anything like an SOV order should have occurred in Chinese.

II. Basis for Claims About Word Order Change

Chinese as an SOV language was first claimed in Tai (1973). His claim, however, was not based on the actual occurrence of a dominant word order, but it rather depended heavily on generalizations deduced from the universals proposed in Greenberg (1963). The evidence that has often been given for SOV order in Modern Mandarin can be summarized below in (1) - (7).

- (1) Modifier + Modified
Adj. + N: hao ren 'good person'
Adv. + V: mingtian qu 'tomorrow go'
Prep-Ph + V: zai zher shang xue 'at here go-to school'
Rel-Clause + Head NP: wo zuotian mai de shu 'I yesterday buy Rel-Pron book' = 'The book I bought yesterday'
- (2) Comparison (Marker + Standard + Adj): ni bi ta gao 'you than he tall'
- (3) Num + Classifier + N: yiben shu 'one-volume book = a book'
- (4) V + Aspect: wo maile bi 'I buy-PERFECTIVE pen'

- (5) Sentence-Final Question Marker:
Ni zuotian qu kanle dianying ma? 'you yesterday go
look-PERF movie Q'
- (6) S ba O V: ni zemmo ba qian diaole?
'you how-come OBJ-MARKER money lose-PERF?'
- (7) Postposition: Shui zai chuang-shang 'sleep at bed-top'

It is obvious that all these forms above except the one shown in (6) merely characterize some particular constructions which are in no sense directly related to the word orders of S, V, and O. The reason that they are advanced as evidence for a basic SOV order is that Greenberg (1963: 78-91) mentions them as correlates to the basic word order under certain circumstances. And they have been somehow taken out of context and used as proof for basic word order. For instance, the correlations between SOV, postpositions, question particle, order of modification, and relative expressions are carefully stated as tentative in Greenberg in the form of 'universals'. They are cited in the following:

- (8) With overwhelmingly greater than chance frequency, languages with SOV order are postpositional. (Universal #4)
- (9) ...in languages with postpositions it [i.e. the genitive] almost always precedes [the governing noun]. (Universal #2)
- (10) ... when question particles...are specified in position by reference to the sentence as a whole,... if final, [such elements are found] in postpositional [languages]. (Universal #9)
- (11) If in a language with dominant SOV order, there is no alternative basic order, or only OSV as the alternative order, then all adverbial modifiers of the verb precede the verb. (Universal #7)
- (12) If the relative expression precedes the noun either as the only construction or as an alternative construction, either the language is postpositional or the adjective precedes the noun or both. (Universal #24)

From (8) - (12), one naturally gets the impression that the items postposition, SOV, modifier-modified pattern and sentence-final question marker are all related to each other and thus deduces the false generalization that if one of the items prevails in a language, the others should logically follow. If we look at the 'universals' more closely, however, it is just as easy to find that SOV order is not in any sense a necessary consequence of the presence of any or all of the other features in a language. Furthermore, the postposition, as was illustrated in (7) above, which seems to serve as a central link between any two forms, can hardly be treated as a postposition in Modern Mandarin in terms of the total grammar, even though it may look like one in an isolated occurrence.

Two more 'universals' that are relevant to our discussion are quoted below:

- (13) In languages with dominant order SOV, an inflected auxiliary always follows the main verb (Universal #16)
- (14) If in comparison of superiority the only order or one of the dominant orders is standard-marker-adjective, then the language is postpositional,....(Universal #22)

According to Greenberg's definition of auxiliary¹, especially set up to explain the universal cited in (13), the Chinese *le* in (4) or any such suffix is not an auxiliary and thus does not qualify to serve as evidence for a postpositional language. The order of constituents in a comparative construction in (14) is to be interpreted as an order of '(X is) Y than tall' for the English concept 'X is taller than Y.' This is exactly the order found in a postpositional language like Japanese. But the one illustrated in (2) is unfortunately marker-standard-adjective rather than standard-marker-adjective.

Consequently, the claim that Modern Mandarin is an SOV language does not seem to be justifiable unless the language could first be proven to be postpositional, which is contrary to empirical facts. Moreover, several of the 'universals' seem to have been misapplied by the grammarians in trying to substantiate their SOV hypotheses.

To conclude my commentary, I quote Langdon (1977:255) on syntactic change: 'While Greenberg's original proposal was commendably tentative and extremely carefully worded not to claim more than the initial survey justified, there has been more recently a tendency, as a number of generalizations received broader confirmation, to relax the wording of some claims and to assume that the magic line between hypothesis and proven fact has been crossed.... More disturbing, however, is the temptation to apply the tentative findings of word order typologies in a categorical manner to less empirically verifiable fields, such as historical reconstruction...'

III. Is Modern Mandarin Dominantly SVO or SOV?

In the preceding section, most of the evidence for Chinese as an SOV language was dismissed on grounds of faulty argumentation. One construction, however, stands out as a true example that bears directly on the OV order. This is the one in (6), repeated below:

- (6) S ba O V: Ni zemmo ba qian diaole?
you how-come OBJ-MARKER money lose-PERF
'How on earth did you lose the money?'

In view of this fact, more practical questions may be raised: (i) can the structure in (6) be considered a genuine SOV construction? (ii) How frequently do sentences of this nature actually occur in

the language? We will try to answer the second question first. Two pieces of writing in recent Chinese newspapers were analyzed. One of them was a short editorial and the other a short story of conversational style.² The result of the analysis is presented in (15) below: (Only relevant word order types are tabulated; others such as SV and VO are not included.)

(15) Frequency of Occurrences of Word Order Types

<u>Word Order Types</u>	<u>Number of Occurrences in</u>	
	<u>Editorial</u>	<u>Short Story</u>
SVO	32	44
SOV (including S <u>ba</u> O V)	1	7
OV	9	3
OSV (including O <u>bei</u> S V)	5	8
Total	47	62

If our statistics are in any way representative, then it is quite obvious that the dominant word order in Modern Mandarin is SVO. There is, however, one sentence type that might tip the scales somewhat if treated differently. It is illustrated below:

- (16) NP prep NP V: Wo gen ta shuole.
 I to/with him/her speak-PERF
 'I said/spoke to him/her.'

If this type is treated the same way as 'S ba O V' is and thus included in the SOV category, then the number of occurrences for SOV will greatly increase, though still not nearly comparable to those of SVO. The key here lies in the treatment of prepositions, including ba in (6) and bei for the passive. This consideration then leads to the other question raised above: Can 'S ba O V' be regarded as a genuine SOV construction?

In the past ten years or so, there have been attempts to treat Mandarin prepositions as case markers.³ Thus, ba is designated as an 'object or patient marker' and bei as an 'agent marker'. If the designations were correct, we would expect the markers to perform a function which would merely make the grammatical relations more explicit than where there are no such markers. That is, the three sentences in (17) below would only vary in explicitness of one or the other grammatical relations or both.

- (17) a. Neitiao yu bei mao chile.
 that fish BEI cat eat-PERFECTIVE
 'That fish was eaten by the cat.'
 b. Mao ba neitiao yu chile.
 cat BA that fish eat-PERFECTIVE
 'The cat ate the fish.'
 c. Bei mao ba neitiao yu chile.

BEI cat BA that fish eat-PERFECTIVE
'By the cat that fish was eaten.'

They, however, are all different semantically. Both (a) and (c) have a pejorative meaning, i.e. the speaker thinks it unfortunate for the cat to have eaten the fish; while both (b) and (c) have an interpretation of there being no more fish left. Furthermore, those with 'markers' differ in grammaticality from those without.

- (18) a. Mao chile neitiao yu le.
cat eat-PERF that fish CHANGE-OF-STATUS
'The cat ate the fish.'
b. (?Bei) mao, neitiao yu chile.
BEI cat that fish eat-PERFECTIVE
c. (?Ba) neitiao yu, mao chile.
BA that fish cat eat-PERFECTIVE

These facts clearly show that the so-called object or patient marker and agent marker in Mandarin actually have both semantic content and syntactic significance other than merely serving as grammatical markers.⁴ (Other markers, i.e. prepositions, are subject to the same kind of analysis. For detail, see Chu, 1979, pp. 107-109.) What follows then is that ba and bei would be better treated as prepositions and that sentences containing them should not be considered SOV and OSV respectively. This conclusion applies to other prepositional phrases in 'NP prep NP V.'

In sum, Modern Mandarin has a dominant SVO rather than SOV order from either an empirical or a more theoretical viewpoint, though there indeed have been some changes in word order.

IV. Causes for Word Order Change in Chinese

Several linguists have constructed theories for the word order change in Chinese. Foremost among them are Li and Thompson (1974), Tai (1976), Huang (1978), and Cheung (1976). Each of the theories will be recapitulated with brief comments in this section. In the next section, an alternative approach will be suggested, which hopefully is complementary to the other theories.

Li and Thompson focus their attention on the gradual reanalysis of SVOV into 'S prep O V' in the development from Ancient to Modern Chinese. They further argue that many of the modern prepositions have already become case marking particles, such as ba and bei discussed in the preceding section. As we have noted, however, that the prepositions in Modern Mandarin are far from being pure case marking devices, our findings do not seem to support Li and Thompson's theory.

Tai claims that reanalysis is not the cause of word order change, but it is rather the effect. The word order shift, he

(19) a. Specified + Specifier $\rightarrow$ Specifier + Specified
 b. V + Prep-Phrase $\rightarrow$ Prep-Phrase + V
 c. NP₁ + Prep-NP₂ + V $\xrightarrow{\text{reinterpreted as}}$ NP₁+V+NP₂+V

(20) $\begin{array}{c} \text{NP}_1 \quad \text{ba} \quad \text{NP}_2 \quad \text{V} \\ \text{NP}_1 \quad \text{bei} \quad \text{NP}_2 \quad \text{V} \end{array}$

Huang concentrates on two structural changes: the deletion of the postverbal preposition yu and the rise of compound forms [V + N]_V. Neither of these seem to bear directly on the word order change from SVO to SOV.

(21) *NP₁ V₁ NP₂ de V₂ ---> NP₁ NP₂ V₁ de V₂
 where de is a marker to introduce a complement
 E.g. he play basketball de well ---> he basketball
 play de well

The reason for moving NP₂ to a position in front of V₁, he argues, is to consolidate structure of the verb with its complement. On the other hand, he does not consider the rise of the ba-sentence a movement toward SOV order. He rather regards it as a counter-example (p. 305): 'If the trend of change is toward OV order, we would at least expect two things: the restriction on the verb and the object liable to be preposed by ba should be gradually lifted, and no semantic contrast grows between a ba-construc-

tion and its corresponding VO form. The data...strongly argue against the prediction.' Our findings in the preceding section agree perfectly with his conclusion in this regard.

V. A New Hypothesis

We have thus far established the following principles concerning word order change in Chinese:

- (22) a. Greenberg's 'universals' are tentative in nature should not be extended or strengthened as absolute criteria for judgment on basic word order.
- b. Modern Mandarin is predominantly SVO rather than SOV.
- c. The object-preposing ba-construction is not a basic SOV order, but a heavily marked alternative word order.

But there are two other facts that must not be overlooked: (i) Some sentences in Modern Mandarin must be constructed in the SOV order, which would take SVO in Classical Chinese, and (ii) there is an overwhelmingly larger number of SOV sentences in modern than in Classical Chinese. We propose two solutions: (a) the rise of resultative complement and compound verbs, and (b) the loss of topic markers.

In (21) above, Cheung postulates an 'underlying' structure for his complement of manner and then further suggests a preposing of the object NP. Actually, this preposing is not limited to complement of manner; it may apply to any complement introduced by a de, which is sometimes known as a resultative complementizer. The same movement is also applicable to many compound verbs. The following examples illustrate the point.

- (23) a. Ta dapo le yanjing.
he knock-break PERF glasses
'He broke the glasses.'
- b. Ta, yanjing dapo le.
- c. Ta ba yanjing dapo le.
- (24) a. *Ta da de fensui le yanjing.
he knock DE pieces PERF glasses
'He broke the glasses in pieces.'
- b. Ta, yanjing da de fensui le.
- c. Ta ba yanjing da de fensui le.
- (25) a. *Ta kan de zhaomi shu le.
he read DE carried-away book PERF
'He was carried away in reading (a book/books).'
- b. Ta, shu kan de zhaomi le.
- c. Ta ba shu kan de zhaomi le.⁵

In the (a) sentences, the order is 'S V COMP O'. When the 'V COMP' is a compound verb, both VO and OV are grammatical. But when the 'V COMP' is a verb plus a complement, then only the OV order is grammatical, with or without the object-preposing *ba*. This indicates that the OV order is a consequence of either the addition of the complement to the verb or the compounding of the verb itself, both of which are in turn a consequence of the simplification of the syllable structure in the historical development of the language.⁶

The loss of topic markers from Classical Chinese necessitates the topic of a sentence to be positioned in a preverbal slot.⁷ If the topic happens to be the object of the sentence, one of the possible configurations of word order after the 'topicalization' is SOV.⁸

In Archaic Chinese, there are at least a dozen particles that may be used to mark the topic. A few examples will suffice.

- (26) *Shi mu zhi jian xi, sang zhe xianxian xi,....* (Shi Jing)
 十畝之間兮桑者閑閑兮
 ten acre PARTICLE among PAUSE, mulberry person lei-
 surely PAUSE,....
 'On the ten-acre field, the mulberry picker is lei-
 surely....'

- (27) *Xian zai, Hui ye.* (the Analects)
 賢哉回也
 virtuous MODE, Hui ACCENT
 'Virtuous is Hui.'

- (28) *Jin ye, mei shi wu yu.* (Shi Jing)
 今也每食無餘
 now TIME-PARTICLE, each meal no left over
 'Now at each meal there is no left-over.'

The particles *xi* 兮 (labelled PAUSE) *zai* 哉 (labelled MODE) and *ye* 也 (labelled ACCENT in one case and TIME-PARTICLE in another) can very well be treated as topic markers.⁹

In (26), both occurrences of *xi* serve as topic markers. As a matter of fact, each sentence of the entire poem is marked with the same particle. If the particle is treated as a topic marker, then the whole poem can be regarded as a topic, with the comment left unsaid. This is exactly what it is construed to be. The overtone of the poem is that given the circumstances the poet would like to propose something, which, however, is not said in words, but implied by the topic markers.¹⁰

In (27), either *zai* or *ye* must be interpreted as a topic marker because of the nature of the paragraph (which both begins and ends with the sentence quoted). I here choose *ye* to be the marker

for several reasons. First, Hui is a student of Confucius' and thus is familiar to the audience. Second, the whole paragraph tells about the simple life that Hui has lead. Third, the point that Confucius is trying to make is how virtuous Hui is. Finally, the sentence in question is in a reversed VS order where the emphasis is on Hui's being virtuous and thus Hui as the subject should be marked as the topic.

In (28), ye also serves to mark the topic, which together with its connective force may very well be translated as 'and now' or 'as for now'.

Now in Modern Mandarin, there is no particle that may perform the functions that xi and ye do in Ancient Chinese. To indicate that a given NP is a topic, it must be placed in a preverbal position. When the NP is an object, the result is an OV order. This gives rise to a large number of (S)OV sentences in Modern Mandarin.

VI. Conclusion

I have roughly outlined the problems in the study of word order change in Chinese. In summary, the following points are made:

1. Chinese has not changed from a dominant SVO to a dominant SOV order, though there are more SOV sentences now than before.
2. The reasons for the increase of the number of SOV sentences (some of which are optionally SOV, others obligatorily so) are two fold: (a) the rise of compound verbs and resultative complements, and (b) the loss of topic marker from Ancient Chinese.
3. Shift of basic word order may be correlated to other constructions such as modifier-modified order, sentence-final question marker, etc., but to determine the former merely on the basis of the latter is an inadequate approach to the problem.

Notes:

1. Greenberg (1963:84): 'For present purposes, such a construction will be defined as one in which a closed class of verbs (the auxiliaries) inflected for both person and number is in construction with an open class of verbs notinflected for both person and number. For example, in English 'is going' is such a construction. This definition, of course, excludes the possibility of such a construction in languages in which the verb has no category of person and number (e.g. Japanese).'
2. The short editorial appeared in Taipei Independent Evening News, July 5, 1979 and the short story appeared in Taiwan Hsin-Sheng Daily, Feb. 19, 1979.
3. See, for instance, Li (1971).
4. Cheung (1976:339) notes that to treat ba simply as an object

marker is inadequate even at the level of description.

5. The variations certainly carry some meaning differences. There are other variations in form but they are not directly relevant to our discussion.
6. The assumption about the cause and effect is like this:

Compound verb arose (so did compound nouns) as a direct consequence of the simplification of syllable structure, which would have given rise to much more monosyllabic homophones than the language could handle. The compounding of verbs at the same time caused the simple action verbs to lose their resultative meaning because the compound verbs now were interpreted as action + result or action + object. This loss of the semantic aspect necessitated the addition of a resultative complement for many action verbs.

Parts of the reasoning need to be further confirmed with empirical data.

7. As far as I know, no previous account can be found anywhere in linguistic literature about this loss of topic markers from Classical Chinese.
8. 'Topicalization' should be understood in its historical sense here.
9. See Dobson (1976:807) for the labels.
10. The first stanza of the poem is often interpreted as:

In the field of ten acres
The mulberry picker is so leisurely,
What if (I) return to hometown with you!

The final question/exclamation is possible in interpretation only through the presence of the xi at the end of the line.

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Postscript:

This paper was first read at the 22nd meeting of the South-eastern Conference on Linguistics in Memphis, Tennessee in March 1980. Since there wasn't any significant comment at the meeting, no revision has been made. My thanks go to Bob Hammond, who read the paper for me and made suggestions concerning wording and otherwise.

A THEORY OF GRAMMATICAL GENDER,
SUGGESTED BY THE ANOMALOUS AGREEMENT OF THE SEMITIC NUMERALS

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Grammatical gender, correlated in part with sex, is not universal, but highly characteristic of certain groups of languages, including some prominent either in ancient or in modern times. Most of the Indo-European languages manifest it, as well as the Semitic and the others linked under the name "Afro-Asiatic" -- i.e., Egyptian, Berber, Cushitic, Chadic. All these are found in a nearly contiguous area, covering most of Europe, the northern half of Africa, and much of western and south-central Asia (besides the further extensions in recent centuries). A few languages isolated in southern Africa or the New World are also reported to have typologically similar systems of gender.

English is one Indo-European language in which grammatical gender broke down, after the Norman conquest. So when we encounter it in learning any other language, it stands out to our naive minds as a strangely relentless requirement that complicates the form of every expression without adding anything to the content. Those who grow up with grammatical gender in their native tongue are nonetheless baffled by the theoretical question of its rationale.

I propose to clarify a peculiarly paradoxical rule of gender agreement in the old Semitic languages, and thereby to uncover a principle valid for gender in other languages too. Examples could be drawn from any Semitic language, but for convenience mine will be from Biblical Hebrew.¹ It has the advantage of an ample and fully indexed corpus, and is free from the further complication of case -- nominative, genitive, or accusative -- which is superadded in Arabic, Akkadian, and (to some extent) in Ethiopic, but has no effect on gender.

The paradox consists in this: the same suffix which many feminine nouns end in, and which is attached to adjectives to show

¹In most modern colloquial dialects of Arabic the presence or absence of the suffix upon a numeral has nothing to do with gender. The unsuffixed form is used with a noun of either gender; e.g., *bēt* 'house' is masculine, and *ḡurfe* 'room' is feminine, but 'five houses' is *xams byūt*, 'five rooms' *xams ḡuraf* ({*xamsatu buyutin*} and {*xamsu ḡurafin*} in Classical Arabic). Alan S. Kaye, *Chadian and Sudanese Arabic in the Light of Comparative Arabic Dialectology* (The Hague, 1976; *Janua Linguarum, series practica* 236), pp. 150-152, from Charles A. Ferguson, "The Arabic Koine," *Language*, 35 (1959), 624; also Ariel A. Bloch, "Morphological Doublets in Arabic Dialects," *Journal of Semitic Studies*, 16 (1971), 53-57.

feminine agreement, is also attached to the numbers from 'three' to 'ten' with a masculine plural noun, but not a feminine:²

- שָׁנָה תְּמִימָה {šənonə tēmiʔmə} 'a whole year' (Lev. 25:30)
 אֵיל תְּמִים {ʔáyil tōmiʔm} 'a whole (perfect) ram' (5:15, 18, 25)
 בָּרִבְרִי בֶן־בִּקְרִי תָמַר {pár ben-bəqór tōmiʔm} 'a whole (perfect) bullock, son of the herd' (Ezek. 43:23, 45:18)
 פָּרָה אֲדָמָה {pəronə ʔādummə} 'a red (brown?) heifer' (Num. 19:2)
 סוּס אֲדָם {súʔ ʔədóm} 'a red (sorrel) horse' (Zech. 1:8)
 שִׁבְעָה פָרִים וְשִׁבְעָה אֵילִים {šibəʔə pəriʔm wəšibəʔə ʔəliʔm} 'seven bullocks and seven rams' (Num. 23:1, 29)
 שִׁבְעַת פָּרוֹת {šəbʔat pəronə} 'seven heifers' (Gen. 41:2, 18, etc.)
 שִׁבְעַת שָׁנִים {šəbʔat šəniʔm} 'seven years' (11:21, 29:18, etc.)
 אִשָּׁה חֲדָשָׁה {ʔiššəʔə xədəʔə} 'a new wife' (Deut. 24:5)
 מֶלֶךְ־חָדָשׁ {mələk-xədəʔə} 'a new king' (Ex. 1:8)
 שְׁלֹשָׁה מְלָכִים {šəloʔəʔə mələkiʔm} 'three kings' (Dan. 11:2)
 שִׁבְעַת נָשִׁים {šəbʔat nəšiʔm} 'seven wives' (Is. 4:1)
 עִיר גְּדוֹלָה {ʔəiʔr gedəʔə} 'a great city' (Joshua 10:2, etc.)
 שֵׁם גְּדוֹל {šém gedəʔə} 'a great name' (II Sam. 7:9)
 חֲמִישָׁה עֲצִים {xəmiʔšəʔə ʔecəʔm} 'five trees' (Joshua 10:26)
 חָמֵשׁ עָרִים {xoməʔə ʔəriʔm} 'five cities' (Is. 19:18)³

Traditional grammars have of course called the suffix feminine. When attached to numerals, some of them still call it feminine, others masculine. What matters is not so much the label as the explanation they give for the pattern of occurrences of this suffix. "Polarity" is the term adopted by a series of linguists from Carl Meinhof on.⁴ I am not going to review the many argu-

²A similar phenomenon has been reported from at least one Cushitic language in Ethiopia, although the numerals themselves -- *sedza* (fem.), *sidzi* (masc.) 'four,' *wólta* (fem.), *wólta* (masc.) 'six,' etc. -- do not resemble the Semitic numerals at all. Robert Hetzron, "Agaw Numerals and Incongruence in Semitic," *Journal of Semitic Studies*, 12 (1967), 169-197, esp. 178-179.

³Aramaic shows nearly the same distribution of the suffix {-ə} as Hebrew, but sparsely exemplified in the meager Biblical corpus (a few pages in the books of Daniel and Ezra):

מֶלֶךְ רָב וְשָׁלִיטָה {mələk ráb wəšalliʔtə} 'a great and mighty king' (Dan. 2:10)

אַרְבַּעַת מְלָכִין {ʔarbəʔəʔə mələkiʔn} 'four kings' (7:17)

רוּחַ יִתְיָא {ruʔax yattiʔə} 'an overwhelming wind' (5:12)

אַרְבַּע רוּתֵי שָׁמַיָא {ʔarbəʔə ruʔəʔə šəmayyəʔə} 'four winds of the sky' (7:2; cf. Jer. 49:36, Zech. 2:10, 6:5, etc.)

⁴"Das Ful in seiner Bedeutung für die Sprachen der Hamiten, Semi-

ments which have been more or less helpful but inconclusive.⁵ Rather I will bring in something momentous which no one, to my knowledge, has noticed before.

I owe this insight to a naive question from an intelligent beginner in my Biblical Hebrew class years ago: "How do you say the numbers when you're just counting?" The answer did not come to mind immediately; for there is no Biblical passage with a straightforward count, "One, two, three, four," etc.⁶ But a little later I needed only to rephrase the question in order to elicit a solution to the old enigma: What form have the Hebrew numerals in the simplest, most basic manner of counting up to ten? Now the question almost answers itself: The simplest manner of counting up to ten is to count the fingers. The origin of decimal reckoning and the reason for the widespread adoption of it by the human race doubtless lie in a universal fact of anatomy -- people have ten fingers. The simple, unsuffixed form of the numerals up to ten will naturally be the form used to count fingers; e.g., אַרְבַּע אֶצְבָּעוֹת {ʾarbāʔ ʔʕsbəʔot} 'four fingers' (Jer. 52:21).

This fact constitutes my major premise in a sort of syllogism. The minor premise is that אֶצְבָּע {ʔʕsbāʔ}, the word for 'finger' (Is. 58:9, etc.), is feminine, as shown by the pronoun agreement in הִיא אֶצְבָּע אֱלֹהִים {ʔʕsbāʔ ʔʕlohīm (hīʔ)} 'it is God's finger' (Ex. 8:15) and by the adjective agreement in הַיְמִינִי אֶצְבָּעוֹת {bəʔʕsbəʔot hayəmonīʔi} 'with his right (fore-)finger' (Lev. 14:27).⁷ From the two premises it will follow that the short form of the numeral is feminine.

So long as the thing counted belongs to the same grammatical class as {ʔʕsbāʔ} -- i.e., so long as the thing counted is a noun of feminine gender -- there was no reason to diverge from the simple form of the numeral; hence אַרְבַּע חַיִּוִּם {ʾarbāʔ xayyōʔim} 'four beasts' (Ezek. 1:5), אַרְבַּע טַבָּעִים {ʾarbāʔ rabbəʔot} 'four rings' (Ex. 38:5, etc.), חָמֵשׁ עִירִים {xomēš ʕorīm} 'five cities,' שִׁבְעָה פָּרוֹת {šəʕbāʔ porot} 'seven heifers.' Nor was there reason to diverge in the rarer case of referring to a number of things which are too vague or unsubstantial to be expressed by a noun with inherent gender:

ten und Bantu," *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, 65 (1911), 201-208; *Die Sprachen der Hamiten* (Abhandlungen der Hamburgischen Kolonialinstituts, Band IX, 1912), pp. 18-20.

⁵The fullest review of them is by Hetzron (above, note 2), pp. 184-193.

⁶In modern Hebrew it is nearly always the short or feminine forms that are used for such counting, even of exclusively male persons. 'Ten' will be עָשָׂר {ʔəššer} ([éser] in the prevailing Israeli pronunciation), although you may go on to announce עֲשָׂרָה שׂוּמְרִים {ʔəššorot} [asará] šomərīm 'ten watchmen.'

⁷Feminine in the other Semitic languages too; but the Egyptian cognate {ḏbē} is masculine, and Egyptian has no such gender agreement of the numerals.

שְׁלֹשׁ אֲנִי נֹתֵן לְךָ אֶת־הָאֵלֶּה וְאַתָּה תֵּבְרָה לְךָ
 {šolós ʔonokíy
 noʔréł ʔoléyko bəxar-ləKó ʔaxat-mehém wəʔəššəš-llóK} 'three
 [things] I am offering you; pick out one of them for me to do to
 you' (II Sam. 24:12, nearly reproduced in I Chr. 21:10). The
 three things are enumerated in the next verse: "Shall seven years'
 famine come into your country, or three months when you flee be-
 fore your enemy as he pursues you, or for there to be three days'
 pestilence in your country?" We can picture the Hebrew speaker --
 in this instance the prophet Gad as the LORD's messenger to Da-
 vid -- touching his fingers successively with his thumb as he
 pronounces, first "seven years' famine," then "three months when
 you flee," and finally "three days' pestilence." Here the three
 things are complex expressions, not simply nouns of a certain
 gender.⁸

Only when the thing counted has a gender opposite to the
 gender of {ʔəbáʔ} 'finger' -- only when the thing counted is
 masculine does the numeral then assume a different form through
 suffixation:

אַרְבָּעָה מְלָכִים {arbəʔəf mələkíym} 'four kings' (Gen. 14:9)

אַרְבָּעָה חֳדָשִׁים {arbəʔəf xəððəšíym} 'four months' (Judges 19:2, etc.)
 The suffix is normally {-š}, except for expressing how many days
 or how many thousands:

שְׁלֹשָׁה יָמִים {šəlóšəš yomíym} 'three days' (Gen. 30:36, etc.)

אַרְבָּעָה אֲלָפִים {arbəʔəf ʔəloḫíym} 'four thousand' (Jer. 52:30, etc.)

These so-called "construct" forms, ending in {-t}, go with things
 that would not be counted actually, vocally: "One, two, three --
 three days," "One, two, three, four -- four thousands." I would
 not envisage an Israelite counting off the days on a physically
 existent calendar.⁹ Instead, most passages that mention "three
 days" or "seven days" or "ten days" are redolent of old formulaic
 traditions.¹⁰

⁸The verb הֵבִיאוּ {həḫəbəʔu} 'shall there come' is feminine singu-
 lar; see Paul Joüon, *Grammaire de l'hébreu biblique*, 2d ed. (Rome,
 1947), pp. 464-465. Essentially similar enumerations in Pr. 6:16-
 19, 30:7-9, 21-23; but when the things are kinds of animals, in-
 cluding some grammatically masculine (regardless of their actual
 sex), the suffixed form of the numeral is found (30:24, 29; cf. 30:
 18).

⁹Lev. 23:15-16 prescribes a primitive method to keep track of fif-
 ty days by means of sheaves.

¹⁰יְמֵי שִׁבְעָה {šibəʔət yomíym} 'seven days' (Gen. 8:10, etc.), in
 contrast to the feminine {šəḫəbəʔəš ʔoníym} 'seven years,' is pecu-
 liarly pertinent in view of the unresolved perplexity of Indo-
 Europeanists facing the forms with and without *t*: Greek ἑπτά,
 Sanskrit {saptá}, Latin *septem*, etc., but English *seven* and so
 throughout the Germanic group. The climactic importance of this
 number was felt more deeply by the early Semites; see S. Levin,
 "The Indo-European and Semitic Languages: A Reply to Oswald Sze-

The word {ʕəbáʕ} means a 'finger' in general, but especially the forefinger (Ex. 29:12, Lev. 14:16,27, etc.). If we posit an old habit of counting aloud, with the thumb (for instance) touching the little finger first, the phonetic resemblance of {ʕəbáʕ} 'finger' to {ʕarbáʕ} 'four' becomes irresistible.¹¹ The precise sound which the letter ʕ, called /cáde/, had in either ancient or Massoretic Hebrew is uncertain; but it was undoubtedly some kind of sibilant.¹² Now outside of the Semitic group, the alternation of a sibilant with [r] is a frequent phenomenon; but the Semitic languages exhibit it very little, if at all. I know of only one other attractive example:

דְּבַשׁ {dəbáʕ} 'honey' (I Sam. 14:29, etc.)

דְּבַשׁ {dəbəʕrɪʔm} 'bees' (Judges 14:8)

There the sibilant following an accented vowel and the [r] preceding one are reminiscent of Verner's rule about consonants in

merényi," *General Linguistics*, 15 (1975), 202-203, and "The Superlative in Latin and the Romance Languages," in *Views on Language*, ed. by R. Ordoubadian and W. V. Engel (Murfreesboro, TN, 1975), p. 229. The Indo-European forms with *t* before a vowel may well reflect a metathesis, motivated by the more congenial structure of a word with the consonant-group -pt-. On the possibility of the Semitic consonant ʕ {ə} being actualized vocally and even nasally, see my book, *The Indo-European and Semitic Languages* (Albany, 1971), p. 340.

¹¹My friend and colleague, Prof. Khalil Semaan, informs me that when an Arab nowadays counts on his fingers, he typically uses the right forefinger and begins by touching the little finger of the left hand. That way {ʕarbáʕ} 'four' comes on the left forefinger.

My main reasons for preferring to visualize the Hebrews touching the right forefinger with the right thumb as they said {ʕarbáʕ} are: (1) Throughout the Bible the left hand is secondary (cf. Gen. 24:49, 48:13-19, Eccl. 10:2). (2) By positing an extremely primitive way of counting up to four only, on the fingers of one hand, we can explain the well known oddity of אַרְבָּעִים יוֹם {ʕarbəʕɪm yóʔm}, which is translated 'forty day[s]', אַרְבָּעִים שָׁנָה 'forty year[s]' (Gen. 7:17, Ex. 16:35, Judges 3:11, II Sam. 15:7, etc.). The suffix that pluralizes a masculine adjective and (with some exceptions) a masculine noun multiplies the numerals by ten. But {ʕarbəʕɪm}, unless combined with a unit from one to nine or with a hundred or more, seems beyond doubt to have been intended and originally understood in a loose sense, 'fours' -- i.e., many times four, an imprecise number, not a total obtained by actually counting to thirty-nine and then going one beyond that.

¹²The minor discrepancy between the vowels {a} and {ə} may be due to the preference in Hebrew for the more open vowel-sound with [r]. In Arabic, however, it is {i} and {ar-} respectively.

The feminine gender of עַיִן {əáyin} 'eye' (Is. 64:3), יָד {yód} 'hand' (Ezek. 2:9), כֹּתֶפֶל {koṭépl} 'shoulder' (29:18), etc., as well as {ʔəbáə} 'finger,' does not consist in any marker upon the noun itself. Only שֶׁפֶּת {šəpṭ} 'lip' (Zeph. 3:9, etc.) and אֵמָט {ʔammṭ} 'elbow' or 'cubit' (Ex. 30:2, etc.) end in {-ṭ}.¹⁸ The feminine agreements, as in עַיִן לֹא רָאָה {əáyin lō-ʔəʔəʔə} 'no eye has seen,' must rather be due to something semantic. Although we may see nothing inherently feminine in these bodily organs, the Semitic language group sets them in contrast to man himself. It has not the sort of logic that would make a woman's eyes grammatically masculine if a man's are feminine. On the contrary, it makes no difference that women too have eyes; the eye is still feminine: עֵינֶיהָ עָרְבָה {teráə əeʔnóh} 'her eye shall be evil' (Deut. 28:56, cf. 28:54). But breasts, which are insignificant if not lacking in man, are masculine in contrast to woman herself: וְשֵׁי תֵּימָן וְשֵׁי שְׂמָלָהּ {wəššəʔəáyim coməqʔəm} 'and dry breasts' (Hosea 9:14; cf. Cant. 4:5, 7:4,9).¹⁹ The paired organs of animals are treated grammatically like those of man: whereas שֶׁרֹץ {šəʔr} 'ox' is masculine (Ex. 21:36, etc.), קֶרֶן {qéren} 'horn' is feminine (Jer. 48:25, etc.). כַּנָּף {konóf} 'wing' is likewise feminine (I Kings 6:27, etc.), while the collective עוֹף {əóf} 'fowl, flying creatures' is masculine (Gen. 1:21, etc.), but צִפּוֹר {cippóʔr} 'a bird' is usually feminine (Deut. 14:11, Amos 3:5, Ps. 84:4, etc.; masc. in Ps. 102:8).

On the other hand, a Hebrew noun with the suffix {-ṭ} is dependably feminine in its agreements. In Arabic the corresponding suffix appears anomalously in a few nouns designating male persons, such as خَلِيفَة {xalífatun} 'substitute, vicar' (of Muḥam-

etc.). The fact is that the singular nearly always means the nose as the seat of anger; so does the dual in some expressions but not in others.

¹⁸ כִּלְיֹת {keloyót} 'kidneys' is fem. pl. (Jer. 11:20, Ps. 23:16, Ex. 29:13,22, etc.). No singular is found in the Bible. The later Hebrew form כִּלְיֹת {kilyót} may be a mere back-formation.

¹⁹ The vocalization of the dual with {-o-} makes both the {-á-} and the {-ó-} of the rare singular an anomaly. It may be traceable to some persistent, if minor, differences of dialect between the sexes -- the women's phonology penetrating into the Biblical text only in words that were seldom pronounced by men.

The Arabic cognate بَدْيُن {badyun} is quaintly described by E. W. Lane, *An Arabic-English Lexicon*, I, part 1, 333 as "masc.; (T[ahdheeb], M[oḥkam], M[u]gh[rib]); or masc. and fem.; (Š[iḥāḥ], M[i]šb[āḥ], K[āmoos]); but most chastely masc.: (T[ā] el-ʔ[A]roos):". A synonym نَاحِدُن {nahdun} is simply masculine.

The one Biblical occurrence of תִּשְׁסָּה {ʔššə} 'testicle' (Lev. 21:20) has no gender agreement. In later Hebrew the plural or dual of it is found with masculine plural verbs (citations in Elieser Ben Iehuda, *Thesaurus totius Hebraicitatis*, I, 416); but by that time the feminine plural forms of verbs were largely obsolete.

mad), and these naturally take masculine agreements. Otherwise, the Semitic grammars are inclined to say that a certain suffix carries feminine gender with it, and that the original semantic basis, if any, for forming the word with this suffix is generally inaccessible to us.

Sometimes, however, we can readily see that the suffix served at first to express a contrast of something quite other than gender. Thus {-וֹת} appears in the infinitive of most stative verbs, such as יִירָא {ləyirəʔ} 'to fear' (Deut. 4:10, etc.), יִאֲהַב {ləʔahəb} 'to love' (10:15, etc.). It is opposed to the unaffixed infinitive of active verbs, which comprise the much larger central class; e.g., יִשְׁמֹר {lišmór} 'to watch' (Gen. 3:24, etc.). Hebrew infinitives, as such, have no occasion for either masculine or feminine agreement. But several stative infinitives have gotten extended into the field of ordinary nouns; and then the suffix is enough to insure that they will be feminine in their agreement, not masculine: יִירָא גָדוֹל {yirəʔ gəðól} 'a great fear' (Jonah 1:10,16), יִתְקַף אֲהַב {teḱaffə ʔahəb} 'love will cover' (Pr. 10:12). Active infinitives do not become ordinary nouns, with one apparent exception: although the infinitive of the verb שָׁטַח {š-ṣ} 'stink' is unattested in the Bible, 'stench' is שִׁטְחָה {šəṣḥā} (Amos 4:10), and it has masculine agreements (Is. 34:3, Joel 2:20).

A sizable majority of Hebrew nouns are masculine. Nearly the same holds, so far as I know, for any language with only the two genders, masculine and feminine. In Arabic, to be sure, where instead of a plural formed by suffixation most nouns have a so-called "broken plural" -- really a collective, with vowels different from the singular -- such collectives are most often feminine singular in their agreements,²⁰ with the result that the feminine may turn up about as often as the masculine in a typical Arabic text. Even so, whatever is labeled feminine, for purposes of grammar, has an essentially contrastive function, to mark a divergence from the basic individual.

Whatever does not so contrast is masculine for lack of it. {šém gəðól} 'a great name', שָׁטַח {šəṣḥā} 'a parched tree' (Ezek. 17:24, etc.) are masculine in no positive sense; but {xəmiššə} 'five trees' is positively in contrast to that which is most countable -- namely, the fingers. Aside from that, the fingers and other matched parts of man stand in contrast to man just as woman does, and are treated the same as woman by the language. In this regard the term feminine gender is not just a label but an appropriate one.

The grammatical treatment of any masculine noun as equivalent to a man, and any feminine noun as equivalent to a woman, comes out most astonishingly (to our taste) in the Hebrew periphrasis

²⁰Those referring to male persons, however, are more liable to have masculine plural agreements; H. Reckendorf, *Arabische Syntax* (Heidelberg, 1921), pp. 24-28, 58-59.

for 'each other':

וַיִּשְׁבְּצוּ אֶת־אִישׁ בְּאָחִיו {yivš-bəʔoxivhu yəḏubbəḏquw}, literally 'they [the crocodile's scales] are stuck a man in his brother'
וְהָיָה אִתְּךָ אִשָּׁה אֶת־חֵרְבְּךָ אֶת־חֵרְבִי עַל־אָחִיךָ {wəxibbartə ʔet-hayerivət ʔiššəʔel-ʔəxoṯəḥ} 'and you are to fasten the curtains a woman to her sister' (Job 41:9, Ex. 26:6)

Such reciprocity, to be sure, is naturally most often between actual persons (Gen. 26:30, Is. 19:2, etc.). If they are not strictly brothers or sisters, that is still in keeping with the dominant paradigm, centered on the human individual to whom the family has given the primary experience of dealing with others. Therefore the words for 'brother' and 'sister' are readily extended to those in the rest of society when they stand in a relation of parity to the central individual.

Besides woman and the paired organs, another contrast to man -- the plural -- is two-fold in Hebrew, though not in related languages. Excluded from the plural into the special category of the dual is that which comes typically (not just occasionally) in twos. But otherwise whatever is more than one is sharply distinguished from one; and in the same fashion a superior being -- god, lord, or master -- is distinguished from the ordinary singular, though less consistently than the paired organs are distinguished by feminine gender. For insofar as a god -- including the God of Israel -- is a personality with a name, the language treats him as masculine singular; and this in turn often influences the agreements of אֱלֹהִים {ʔlōhīm}, the word for 'god' in general. Although it has exactly the same suffix as we saw in {ʔevlīm} 'rams,' {məloḵīm} 'kings,' {ʔecīm} 'trees,' etc., still it usually takes a masculine singular verb, seldom a plural (Gen. 1:1, II Sam. 7:23, I Chr. 17:2, etc.).

Gender in the ancient Indo-European languages has a lot in common with the Semitic, but is more complex. Not only is there the divergence of feminine from masculine, but also the so-called "neuter" gender.²¹ Masculine and neuter are just partly differentiated from each other. The latter lacks any positive distinction between the function of subject and the function of object; e.g., the Greek δῶρον 'a gift' either way has the same ending (*Iliad* 23.745, Isocrates 2.7, etc.) which ταῦρον 'a bull' has when serving as an object (*Iliad* 16.487, etc.), whereas the subject ταῦρος has a different ending (20.403, etc.). The contrast in the plural is sharper, more surprising. Instead of the subject ταῦροι 'bulls' (Aristotle, *Historia animalium* 9.3.611a.2, etc.) and the object ταῦρους (*Iliad* 21.131, etc.), the neuter has δῶρα for either the subject or the object (1.213, 390, etc.), with the same ending as a feminine singular subject. Furthermore

²¹This ancient term, translated from the Greek οὐδέτερον, simply meant 'neither' (masculine nor feminine). It can be criticized as an unhelpful label; but inanimate, a term preferred by recent linguists, can mislead us more seriously. Inert might be better.

in Greek (and occasionally in early Sanskrit)²² it takes a singular verb. So the neuter nouns form a collective rather than a plural.²³

The bodily organs in Indo-European show no such pattern of gender as the relatively straightforward one that we have explored in Semitic. The words for 'hand' are mostly feminine, but for 'finger' masculine.²⁴ Those numerals which undergo suffixation to agree with nouns behave much like ordinary adjectives, except for lacking singular forms, of course, and so contribute nothing in particular to a theory of gender. For one prominent type of adjective the basic form, consisting of the stem, is the vocative singular masculine; but for other types, which are seldom used for addressing a person, the basic form is the neuter singular, nominative or accusative. Greek examples are the vocative φίλε 'dear' (*Iliad* 15.221, etc.) and the neuter ἡδύ 'sweet, pleasant' (7.387, *Odyssey* 4.746, etc.). Some further suffix is needed to derive any other form; it often entails Ablaut, or vowel gradation, besides.

A sort of hierarchy of contrasts determines the function of each ending. We shall never recapture that set of relations completely and with certainty; still it is worthwhile to work out as much of it as we can.

²²A. A. Macdonell, *A Vedic Grammar for Students* (Oxford, 1916), p. 289.

²³In Arabic, as we observed earlier, the collective (which has no feminine ending itself) often has feminine singular agreements of verb and adjective. So its adjectives will take the ending {-at} (nominative), {-at} (accusative), {-at} (genitive), all three pronounced [ah] at a pause. But whether the nominative {-u}, the accusative {-a}, the genitive {-i} gets attached to the long (masculine) form of a numeral -- i.e., the one with {-at} -- or to the short (feminine) form without {-at}, depends on the gender of its singular counterpart:

خَمْسَةُ بَيْوتٍ كَبِيرَةٍ {xamsatu buyūtin kabīratin} 'five large houses'

خَمْسُ غُرَفٍ كَبِيرَةٍ {xamsu ɣurafin kabīratin} 'five large rooms'

غُرْفَةٌ كَبِيرَةٌ {ɣurfatun kabīratun} 'a large room' (fem. sing.)

بَيْتٌ كَبِيرٌ {baytun kabīrun} 'a large house' (masc. sing.)

Cf. note 1, and see Reckendorf (above, note 20), p. 204.

²⁴C. D. Buck, *A Dictionary of Selected Synonyms in the Principal Indo-European Languages* (Chicago [1949]), pp. 238-240.

EXPOSITIVE ADVERBIALS AND DECLARATIVE SENTENCES

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Certain adverbials are unusual in that they can appear in sentences without modifying any verb in those sentences. Examples include:

- (1) Frankly, I never liked Sylvester.
- (2) Mayor Cranston, to conclude, has done much to help our senior citizens.
- (3) With respect to your request for another loan, you just don't have the necessary collateral.

To explain these sentences I propose that adverbials like those underlined modify an implicit phrase containing a performative verb of linguistic communication such as saying, asking, or ordering. The function of such adverbials is to qualify not any explicit verb in the sentence, but the speaker's very act of saying what s/he is saying. Following a suggestion of Jerrold Sadock, I'll call these "expositive adverbials".¹

One group of sentences which lend themselves nicely to the performative analysis are derived from expressions of swearing. Consider such sentences as:

- (4) With God as my witness, I never touched that money.
- (5) By Jove, I didn't know she had a twin sister!

If the performatives were made explicit in these sentences, we would have:

- (6) With God as my witness, I swear that I never touched that money.
- (7) By Jove, I swear that I didn't know she had a twin sister!

The adverbials With God as my witness and By Jove now can be seen to qualify the verb swear.

Closely related to (6) and (7) are sentences like (1), (8), and (9) in which the expositive adverbial is used to express the speaker's sincerity in saying what s/he is saying.

- (8) In all honesty, I'm glad he was transferred to Sheboygan.
- (9) To tell you the truth, Jocasta and I haven't been getting along for over a year.

Again, the adverbial in each of these sentences modifies an implicit performative of saying. Spelled out, these sentences would read something like:

- (10) In all honesty, I say that I'm glad he was transferred to Sheboygan.
- (11) To tell you the truth, I tell you that Jocasta and I haven't been getting along for over a year.

Other adverbials which do the same job as those in (8) and (9) are honestly, to be honest with you, and in truth.

Another relatively simple use for expositive adverbials is to tell one's audience where what one is saying has been said before:

- (12) As Lincoln once said, you can't fool all the people all the time.
- (13) As I was just telling Gildersleeve, this is the warmest August on record.

A more complex group of expositive adverbials are reason adverbials, which a speaker uses to give a reason for saying what s/he is saying.

- (14) Tilda must be sick, because no one's seen her all day.
- (15) Turn down that stereo, because I've got a splitting headache.
- (16) Why weren't you there at 6, because we were all waiting for you?
- (17) Since you asked, there's a grand total of 34¢ in the treasury.

Introducing one's topic is another job for expositive adverbials, as is indicating that one is going to stick to the current topic. Sentence (3) is an example here, as are:

- (18) To update you on the search for a new mayor, we've found only two good candidates so far.
- (19) While we're talking about repairs, has the roof been fixed?

The phrases as regards, with regard to, and regarding are also used to indicate topic. A speaker may also use an expositive adverbial to indicate that s/he is going to change the subject, as in:

- (20) On a different note, private industry has responsibilities here too.

Another use for expositive adverbials is to locate the speaker's comment in the discourse as a whole, by identifying it as an

aside, a repetition of something already said, a summary, etc. This is what is happening in (2), and in:

- (21) Incidentally, (By the way,) the blue paint has arrived.
- (22) In other words, (To put it another way,) nothing has changed since last November.
- (23) Again, (To repeat what I said earlier,) why should we have to pay for their mistakes?
- (24) In short, (In sum, To sum up, In conclusion, To summarize,) our company is in big trouble.
- (25) Moving right along, (To continue,) we have to consider the matter of Esterhazy's resignation.

The order in which one is arranging his/her comments, too, and the breaks between one comment and the next, can be indicated by expositive adverbials.

- (26) First, (To begin with, Secondly, Finally,) nothing in the testimony shows that my client was even in the building before the fire.

Expositive adverbials can also express shifts in direction in one's comments, as in:

- (27) By way of contrast, Olga is the most conscientious worker you could ask for.
- (28) [Fred is always in class.] At the same time, he never participates in discussions.

The last group of expositive adverbials I want to look at are those which qualify the participle speaking before an implicit I say; quite often in this pattern the word speaking itself is omitted. A sentence like (29), for example, is short for (30).

- (29) Technically, no one is allowed in here before 8:30.
- (30) Technically speaking, (Speaking technically,) I say to you that no one is allowed in here before 8:30.

Several other adverbs work like technically:

- (31) Personally, there is nothing to be gained by telling her off.
- (32) Generally, a passport is not needed when travelling in North America.
- (33) Loosely (speaking), a tomato is a vegetable.
- (34) Strictly (speaking), a tomato is a fruit.
- (35) Basically, there are three causes of this ailment.
- (36) Essentially, all I'm asking is that you do your job.

I'm not sure, but this pattern might also explain words like interestingly, surprisingly, and hopefully, in sentences like:

- (37) Interestingly, the male black widow seems to know what is going to happen to him.
 (38) Surprisingly, even Lloyd's mother didn't vote for him.
 (39) Hopefully, we'll be back before the storm begins.

It has often been claimed that these adverbs are elliptical for It is interesting that, It is surprising that, and It is to be hoped that. But such accounts don't adequately explain why these words appear as adverbs, nor do they adequately capture the speaker's attitude toward the state of affairs in the main clause, typically built into most people's use of hopefully. But if we fill out these sentences as fitting the pattern of (29)-(30), as

Speaking interestingly, }
 Speaking surprisingly, } I say that . . .
 Speaking hopefully, }

we can explain both these phenomena.

I haven't given, and couldn't hope to give, anything like a complete catalogue of expositive adverbials. Here are a few that I haven't given categories for:

- (40) Before I forget, there's leftover meatloaf in the fridge.
 (41) At the risk of sounding corny, you're my favorite uncle.
 (42) For the last time, are you going to sign this petition or aren't you?

Indeed, there seems to be no limit to the ways in which a speaker might qualify his/her saying of what s/he says, and wherever this is the task to be accomplished, an expositive adverbial can be used.

Having examined the use of expositive adverbials and their connection with implicit performative verbs, I would now like to turn to the claim some linguists have made that sentences like those we have been considering show that all sentences contain implicit performative phrases.

Ross's paper "On Declarative Sentences" has the best known arguments for the thesis that all declarative sentences must "be analyzed as being implicit performatives,"² and among his arguments is an appeal to one kind of expositive adverbial we have been discussing--reason adverbials. A fuller argument for the performative analysis based on expositive adverbials is found in Jerrold Sadock's Toward a Linguistic Theory of Speech Acts.³ Using many of the kinds of sentences we have cited, he argues that a sentence with an expositive adverbial in it must have a performative verb of linguistic communication in its logical structure. So far so good. But Sadock is arguing for the performative analysis of all sentences, and so he goes one step further. Though this further argument from the existence of expositive adverbials

to the performative nature of all sentences is not made fully explicit, it seems to run like this. (For simplicity, I'll consider the argument only as applied to declarative sentences, though it also can be applied to other kinds of sentences.) Declarative sentences containing expositive adverbials must have a performative phrase like I say in their logical structure. But we could add an expositive adverbial to any declarative sentence. So every declarative sentence must already have a performative phrase like I say in its logical structure, waiting for an expositive adverbial to modify it.

Here is where I part company with Ross and Sadock. I agree, and have argued, that declarative sentences with expositive adverbials in them are based on performative verbs. But I do not agree that such sentences are just ordinary declarative sentences with an expositive adverbial added on. I suggest rather that they are sentences which have added both an expositive adverbial and an implicit performative phrase. Ordinary declarative sentences do not already have an implicit performative verb in them, and so are not in their logical structure performative sentences.

I have no knockdown argument for my position here, but I think that there is good evidence for it in the relative sophistication of sentences with expositive adverbials in them. Children learn to use expositive adverbials only very late, much later than they learn other adverbials. Indeed, even in adult speech many people seldom use expositive adverbials. The reason for these phenomena, I submit, is that we learn to use performatives like I say late, and so learn to use adverbials which modify such performatives late. The use of performatives is late because it requires a self-consciousness in one's use of language, a reflective awareness of what one is doing, that is not present in children's early speech and, indeed, is not present in much adult language.

If the performative analysis of declarative sentences were correct, notice, every use of every declarative sentence would require the speaker to be familiar with an I say or other performative phrase underlying that sentence. In their earliest use of sentences children would be familiar with the implicit performative, and so we should expect them to learn expositive adverbials modifying this I say as easily as they learn other adverbials modifying other familiar verbs. In fact, however, it takes children much longer to learn the use of expositive adverbials. And this is so, I think, because in their early years of using language they are not familiar with using performatives like I say which expositive adverbials modify.

The reason many adults seldom use expositive adverbials is the same. To be able to use adverbials modifying performatives, one has to be familiar with using performatives, and this requires a sophisticated kind of self-awareness in using language that many people don't have. Those who use expositive adverbials the

most are people who are the most self-conscious about using language--people like academics, politicians, and lawyers. That's why, too, expositive adverbials are found more in formal speeches than in conversation, and more in written language than in spoken.

Even among people like ourselves, who use performatives and expositive adverbials a great deal, moreover, I think that there is a distinction to be made between our ordinary declarative sentences and our declarative sentences that have an expositive adverbial--and so an implicit performative phrase--in them. Most of the time in using declarative sentences we do not, either explicitly or implicitly, say that we are saying something--we simply say something.

The existence of expositive adverbials, then, shows us that some apparently simple and non-performative sentences are more sophisticated than they look; but I think it's simply false that all our sentences are more sophisticated than they look.

NOTES

¹Jerrold M. Sadock, Toward a Linguistic Theory of Speech Acts (New York: Academic Press, 1974), p. 36. My use of the term "expositive adverbial" is wider than Sadock's; it covers reason adverbials and phrases like for the last time, which Sadock counts separately. This difference in terminology makes no difference to the arguments in this paper, however, because Sadock and I are talking about the same set of adverbials as requiring implicit performative phrases.

²John Robert Ross, "On Declarative Sentences", in Roderick A. Jacobs and Peter S. Rosenbaum, eds. Readings in English Transformational Grammar (Waltham: Ginn & Co., 1970), p. 223.

³Sadock, pp. 36-39.

THE ITALIAN CONSTRUCTION
VERB + PREPOSITION + INFINITIVE*

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In most recent works dealing with Italian grammar, prepositions are described in purely semantic terms.¹ While it is generally true that prepositions have a functional value of relating semantically two adjacent elements in a phrase, there are cases in modern Italian in which the prepositions *a* and *di* cannot be assigned any semantic value. The following sentences contain a preposition which seems semantically redundant:

Ho incoraggiato Mario a studiare.
'I encouraged Mario to study'.

Ho chiesto a Mario di aiutarmi.
'I asked Mario to help me'.

The constructions *a studiare* and *di aiutarmi* are prepositional infinitives. Even though the origin of the preposition in this structure has been studied in detail,² no explanation has been proposed so far for the use of a specific preposition with the infinitive in modern Italian. Evidence shows that, at least for a subset of the construction VERB + PREPOSITION + INFINITIVE, the selection of a particular preposition is highly predictable and that the value of this preposition is syntactic, rather than semantic.

The subset under investigation consists of main verbs accompanied by a direct or indirect personal object, followed by a preposition and then an infinitive. The most important variable in this sequence is the main verb, since the syntactic structure of this verb governs the selection of one particular preposition. Consider the following:

Lo aiuto a studiare.
'I help him study'.

Lo costringo a lavorare.
'I force him to work'.

The structure of these sentences results from a subject raising³ rule which allows the action of the infinitive to refer back to the preceding direct object, much like in the Latin construction *accusativus cum infinito*. Moreover, in modern Italian the subject of an infinitive can also be in the dative case:

Gli ordino di aprirmi la porta.
'I order him to open the door for me'.

Gli permetto di baciarmi.
'I permit him to kiss me'.

It is immediately apparent that the case of the subject of the infinitive depends entirely on the syntactic function of the main verb.

There is a semantic restriction which limits the possible application of the subject raising rule to verbs which have a component of finality in their meaning.⁴

From a corpus of data which contains main verbs indicating finality accompanied by an object [+human], the following two comments emerge:

1. verbs accompanied by a direct object [+human] are followed by the preposition *a* and the infinitive;
2. verbs accompanied by an indirect object [+human] are followed by the preposition *di* and the infinitive.

These two comments indicate that in modern Italian final subordinate clauses may take on three forms, depending on the structure of the principal clause. Specifically, subordinate clauses may consist of the preposition *a* and an infinitive, or of the preposition *di* and an infinitive, or of the subordinate conjunction *che* and a conjugated verb. (See Table 1).

We shall leave unanswered the question why verbs under (a) do not seem to have a counter-part construction which would allow a subordinate clause introduced by *che*, such as found in the category (b₂). Also, we shall not discuss here the choice between (b₁) and (b₂); suffice it to say that if the subject of the verb in the subordinate clause is expressed as an object of the main verb, the subordinate clause contains a prepositional infinitive.

A subset of (b₁) is the class of verbs indicating the action of saying, thinking, and perceiving; these verbs allow, just like verbs expressing finality, two possible subordinate clause constructions (b_{1a}) and (b_{2a}).⁵ Needless to say, the data included in Table 1 are in no way considered complete.

From a synchronic point of view, the prepositional infinitive is a special kind of subordinate clause which is affected by a number of specific syntactic rules.⁶ It is significant that the prepositions *a* and *di* are mutually exclusive in this context.⁷

We have said that the preposition *a* and the infinitive require a main verb that is accompanied by a direct object, and the preposition *di* and the infinitive require a main verb that is accompanied by an indirect object, but we also found a small number of exceptions. More explicitly, some verbs which function transitively require the preposition *di*, such as *pregare*, *incaricare*, *scongiurare*, *supplicare*. On the other hand, the verb

A Subset of Subordinate Clauses

a	Dir. + Main Obj. + Verb + a + Inf.	b ₁	Ind. + Main Obj. + Verb + di + Inf.	b ₂	Main + che + Subj/Ind.
<i>lo aiuto a</i> <i>lo abituo a</i> <i>lo ammonisco a</i> <i>lo autorizzo a</i> <i>lo condannano a</i> <i>lo costringo a</i> <i>lo esorto a</i> <i>lo forzo a</i> <i>lo incito a</i> <i>lo incoraggio a</i> <i>lo indico a</i> <i>lo invito a</i> <i>lo mando a</i> <i>lo obbligo a</i> <i>lo persuado a</i> <i>lo riduco a</i> <i>lo sfido a</i> <i>lo stimolo a</i>	<i>gli auguro di</i> <i>gli concedo di</i> <i>gli impedisco di</i> <i>gli permetto di</i> <i>gli proibisco di</i> <i>gli propongo di</i> <i>gli raccomando di</i> <i>gli suggerisco di</i> <i>gli ordino di</i>	<i>mi auguro che lui</i> <i>concedo che lui</i> <i>impedisco che lui</i> <i>permetto che lui</i> <i>proibisco che lui</i> <i>propongo che lui</i> <i>raccomando che lui</i> <i>suggerisco che lui</i> <i>ordino che lui</i>	<i>b_{1a}</i> <i>ammetto di</i> <i>accetto di</i> <i>credo di</i> <i>dico di</i> <i>dimostro di</i> <i>dubito di</i>	<i>b_{2a}</i>	<i>ammetto che</i> <i>accetto che</i> <i>credo che</i> <i>dico che</i> <i>dimostro che</i> <i>dubito che</i>

Table 1: The Structure of A Subset of Subordinate Clauses in Modern Italian.

insegnare, accompanied by an indirect object, requires the preposition *a* before the infinitive. In our opinion, these exceptions can be explained only if diachronic processes and sociolinguistic variation are taken into account.

Firstly, there is some evidence to suggest that the present arrangement and characteristics of the prepositional infinitive are quite recent, since the structure itself has been attested in Old Italian. Written records indicate a certain wavering between the use of a preposition and its absence in the past. For example, the verb *pregare* could be followed both by the direct and the indirect object: in Uguccione da Lodi we find both *pregar Dio* and *pregar a Dio*;⁸ in the *Novellino* the infinitive is not followed by any preposition after the verb *insegnare*: *insegnatemi campare*;⁹ Giacomo da Lentini has *sì kom om ke si crede/salvarsi*;¹⁰ in the *Quattrocento*, the infinitive could be preceded by a preposition.¹¹ If we skip over five centuries, we note that the speakers of *italiano popolare* showed uncertainty in the use of prepositions, and they opted for the preposition *a* with any verb.¹² Even these scanty examples and a rather skimpy examination reflect the prolonged changes that affect Italian syntax. We would like to suggest that the subject raising rule in modern Italian owes its existence to the Latin construction *accusativus cum infinito*. Diachronic processes changed the outward form of the sentence, specifically the fact that the subject of the infinitive can be in the 'accusative' or the 'dative' case, and the fact that a preposition is inserted between the main verb (which has a component of finality) and the infinitive.

Secondly, it need not be stressed that Italy shows an extremely rich sociolinguistic variation. Filzi touches upon the fascinating diversity dialects manifest in the use of prepositions,¹³ and Rohlf's cites a number of other examples to corroborate this diversity.¹⁴ Therefore, the relatively recent stability of the type VERB + PREPOSITION + INFINITIVE and the possibility of some influence from the dialects could hint at some of the reasons why a small number of verbs does not fit in the pattern outlined above.

A final comment will conclude our description of a subset of subordinate clause constructions in Italian. The preposition used in the construction under investigation has a syntactic function and is devoid of any semantic information. The fact that it can be predicted depends wholly on the syntax of the preceding main verb. It is likely that further examination of the use of prepositions in other constructions will probably have to take into consideration the semantic as well as syntactic function of the main verb. For example, given two reflexive verbs, *mi abito* (*a*) and *mi ingegno* (*di*), what is the factor which governs the selection of a specific preposition for each? We have tried to explain just one subset of constructions which contain a preposition, but the challenge of other uses of prepositions is still with us.

NOTES

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- 2 Pavao Tekavčić, *Grammatica storica dell'italiano. Morfologia e sintassi*. Bologna: Mulino, 1972, pp. 339-40 and 524-33.
- 3 Carol Kiparsky and Paul Kiparsky, "The Semantics of Subordinate Clauses," in *Actes du X^e Congrès International des Linguistes*. Bucharest, 1967, vol. 11, pp. 392.
- 4 James D. McCawley, "The Role of Semantics in a Grammar," in *Grammar and Meaning*. Tokyo: Taishukan, 1973, p. 85.
- 5 The verb *dire* should appear also under the category of verbs indicating finality; in the subordinate clause the difference between an order and a simple statement of facts is resolved through the use of either the subjunctive or the indicative: *Dico che lui venga* and *Dico che lui viene*.
- 6 Luigi Burzio, "Italian Causative Constructions," *Journal of Italian Linguistics* 3,ii(1978): 1-72; and Andrew Radford, "Clitics under Causatives in Romance," *Journal of Italian Linguistics* 4,i(1979): 137-82.
- 7 The verbs *convincere*, *persuadere*, *pensare* may be followed by both the preposition *a* and *di*; further research is needed to specify the criteria for the selection of each preposition with these verbs.
- 8 Ugucione da Lodi, *Il sermone*, v.3 and v.307 in Gianfranco Contini, *Poeti del Duecento*, Milano: Ricciardi, 1960, pp. 597-624.
- 9 *Il Novellino*, Milano: BUR, 1957, p. 65, LIX, 28.

- 10 Giacomo da Lentini, *Meravigliosamente un amor mi dstringe*, vv. 17-18.
- 11 Vito R. Giustiniani, *Il Testo della Nencia e della Beca secondo le più antiche stampe*. Firenze: Olschki, 1976, pp. 67-68.
- 12 Manlio Cortelazzo, *Avviamento critico allo studio della dialettologia italiana. Lineamenti di italiano popolare*. Pisa: Pacini, 1972, pp. 113-115.
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- 14 Gerhard Rohlfs, *Grammatica storica della lingua italiana e dei suoi dialetti. Sintassi e formazione delle parole*. Torino: Einaudi, 1969, pp. 87-106.

A NOTIONAL FEATURE MAP TO SPANISH ASPECT

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0 Over the past two decades there has been marked disagreement as to the roles of the Spanish preterite and imperfect verb forms within models of Spanish aspect. This study traces arguments concerning the concepts "inceptive" and "terminative" before proposing a concise four-feature treatment of Spanish aspect, a treatment which would only be encumbered if it included such concepts.

1.1 The most controversial model of Spanish aspect was put forth by William Bull (1960) who divides all events into "cyclic" and "non-cyclic."¹ The former correlate with verbs like abrir (to open), morir (to die), and levantarse (to get up) while the latter include dynamic situations which may be prolonged without the action stopping and beginning anew; these correlate with verbs like hablar (to speak), andar (to walk), and trabajar (to work). According to Bull it is impossible to focus on the initiation alone of cyclic events when preterite is used. In such cases it is the termination of the action which receives the focus:

- (1) A las ocho abrí la ventana, 'At eight I opened the window'

The cyclic event, "opening the window," can be considered to have ended at eight o'clock. Bull made a different analysis, however, for non-cyclic events like the following:

- (2) El presidente habló a las ocho, 'The president spoke at eight'

The extendable non-cyclic event "speaking" is deemed to have begun but certainly not to have ended at eight o'clock. In the Bull model, then, preterite focus can be on the termination of cyclic events and on the inception of non-cyclic events.²

1.2 With examples like (3) and (4) Guitart (1978: p.140) argues against Bull's claim that preterite can be inceptive in non-cyclic event predicates:

- (3) Dijo adiós y corrió hacia el avión, 'He said goodbye and ran toward the plane'
(4) Dijo adiós y echó a correr hacia el avión, 'He said goodbye and took off running toward the plane'

He notes that the insertion of lentamente in (3) produces the

acceptable (5) but when inserted in (4) it produces the unacceptable (6):

(5) Dijo adiós y corrió lentamente hacia el avión, 'He said goodbye and slowly ran toward the plane'

(6) *Dijo adiós y echó lentamente a correr hacia el avión, 'He said goodbye and ran off slowly toward the plane'

Guitart concludes in this manner; since echar a + infinitive is inherently inceptive, and is not compatible with lentamente, the simple preterite corrió of example (3) does not refer (as Bull would hold) only to the beginning of running; if that were the case it would not be compatible with lentamente as it is in (5). This particular argument is open to question, however, since it is based upon expressions of echar a + infinitive, expressions which clearly signal sudden or vigorous movement; this feature by itself might be the reason for incompatibility with lentamente.⁵

1.3 Another kind of example which Bull explains through the inceptiveness concept is the following:

(7) Anduvo a los dos años, 'He walked at two years of age'

Bull (1965: p.169) maintained that this type of example focusses on the "beginning of walking." If this is true, however, it is different (as indicated by Bolinger, 1963: p.132 in another context) from the "beginning of talking" already discussed for example (2). While in example (2) it is clear that the president was to talk for a period of time and stop, it seems to be implied by example (7) that the subject continued to "be able to walk"--not to "walk" incessantly from the time he was two years old. Such an example might best be interpreted as "learned how to walk." If so, we are dealing with the totality of an instance of learning, not just the beginning or the end. Clearly then, a temporal context like a los dos años is not always compatible with inceptiveness as a specific clock time might seem to be.

1.4 The inceptiveness concept was also applied by Bull to explain the preterite/imperfect contrasts of the statives conocer (to know in the sense of German *kennen*) and saber (to know in the sense of German *wissen*) so that they could fall within a general rule rather than having to be treated as isolated cases of meaning change. Bull (1965: p.170) regarded the preterites of these verbs as showing the inception of non-cyclic events. At first glance this seems quite reasonable. For example, the use of sabía in (9) may be considered a continuation of the "knowing" which began in (8):

(8) Lo supe, 'I found it out'

- (9) Lo sabía, 'I knew it'

Guitart (p.147) disagrees that the preterite of these verbs contains an inceptive feature at all since it is incompatible with lentamente while an explicit signal of lexical inceptiveness like empezar (to begin) is compatible with lentamente:

- (10) *Lentamente lo supe, 'I slowly found it out'

- (11) Lentamente empezó a gustarme aquel cuadro, 'I slowly began to like that painting'

He therefore describes these actions as referring to a situation which comes fully into effect rather than referring to a beginning.⁴ Let us examine this question in another way by comparing saber with hablar. The latter can be considered a non-cyclic "type" verb since if we accept Bull's framework it can be said to represent the inception of a prolongable occurrence -- especially when a particular clock time is used:

- (12) Hablé a las ocho, 'I spoke at eight'

- (13) Todavía hablaba a las nueve, 'I was still speaking at nine'

- (14) Lo supe a las ocho, 'I found it out at eight'

- (15) Todavía lo sabía a las nueve, 'I still knew it at nine'

While (12) and (13) can be considered to show respectively the inception of the act of speaking and the continuance of that act, examples (14) and (15) show respectively the act of knowing something for the first time (finding out), and the continued state of knowing. The subject does not continue to "find out" for an extended period of time in the case of saber but does continue to "speak" for an extended period of time in the case of hablar.

Bolinger (p.130) explained saber as an "equivocal" verb; one which selected from two different meanings relating respectively to either an "acquisitional" or a "retentative" phase. In the case of saber the acquisitional phase would be "find out" (a cyclic event). In contrast to Bull, Bolinger did not see the preterite as relating inceptiveness but instead as expressing one of the two meaning choices connected with the equivocal form saber. Using Bolinger's acabar de test (p.130) we can further establish that this acquisitional phase behaves like cyclic rather than non-cyclic events:

- (16) Acabo de saber su número de teléfono, 'I just found out his telephone number'

(17) Acabo de hablar con Juan, 'I just finished speaking with Juan'

(18) Acabo de apagar la luz, 'I just turned out the light'

While saber in (16) must be interpreted as "finding out" rather than "ending a state of knowing" note that non-cyclic hablar in (17) can reflect the prolonged action itself coming to an end -- termination, not inception. Cyclic apagar in (18) can only reflect "totality" as in (16); the action of putting out the light may be deemed to have begun and ended at practically the same moment. Thus, the preterite of a stative like saber is not really parallel to the preterite of non-cyclic event verbs. Note also that saber and conocer normally operate completely free of the context of discourse in terms of preterite/imperfect distinctions since their use is triggered by semantic, not grammatical constraints.⁵

1.5 Bolinger (p.129), who accepted the idea that cyclic events can be oriented toward an end point, shows, however, that they can also be oriented toward a starting point:

(19) El médico me examinó a la una, 'The doctor examined me at one o'clock'

He concludes that the apparent correlation between termination and either cyclic or non-cyclic events appears to depend on the nature of the event.

Using the following examples Guitart (p.137) makes a general argument against Bull's conception of terminative focus as shown by the preterite for cyclic events:

(20) El tren presidencial pasó por la terminal, 'The presidential train went by the terminal'

(21) El furgón de cola del tren presidencial pasó por la terminal, 'The caboose of the presidential train went by the terminal'

According to Guitart, since (20) obviously does not refer exclusively to the passing of the caboose as does (21), preterite in (20) is stating something other than the "termination of the cycle." But we may ask what validity this same argument would have with reference to a sentence containing an explicit marker of terminative focus such as the following:

(22) El tren presidencial terminó de pasar por la terminal, 'The presidential train finished passing by the terminal'

It would seem that (22) does not refer exclusively to the passing of the caboose either. Does this mean that there is no terminative focus in spite of the lexical marker terminó? I will return

to this matter shortly.

1.6 Another assault upon the inceptiveness interpretation lies in the suggestion that such an example as (2) implies no inceptive focus since, as shown in (23), it can not withstand the insertion of y a las nueve no había terminado todavía as can a sentence containing an explicit marker of inceptiveness like empezar in (24):⁶

(23) *El presidente habló a las ocho y a las nueve no había terminado todavía, 'The president spoke at eight and still hadn't finished at nine'

(24) El presidente empezó a hablar a las ocho y a las nueve no había terminado todavía, 'The president began to speak at eight and at nine still hadn't finished'

But such an argument leads to the more basic question of whether lexical inception and termination are really identical to grammatical inception and termination.⁷ If not, then all such arguments are misguided. Let us examine the following examples:

(25) Ayer a las ocho empecé a comer, 'Yesterday at eight I began to eat'

(26) Ayer a las ocho empezaba a comer, 'Yesterday at eight I was beginning to eat'

(27) Ayer a las ocho terminé de comer, 'Yesterday at eight I finished eating'

(28) Ayer a las ocho terminaba de comer, 'Yesterday at eight I was finishing eating'

We may of course question the use of imperfect form in (26) and (28) if inception and termination are in fact features which should trigger preterite. One explanation is simply that in these examples there is still another feature which triggers imperfect form. I will posit a "backdrop" feature since both examples imply that some event is about to or could happen while the eating goes on.⁸ Besides "backdrop," another feature which could be seen to overrule the inception-preterite correlation is "habituality:"

(29) El presidente siempre hablaba a las ocho, 'The president always spoke at eight'

Although not attempting to distinguish between lexical and grammatical inceptiveness, we have noted here that regardless of the presence of a supposed inceptive feature, imperfect form (rather than preterite) may be used because of other discourse constraints. Let us now examine a case of obvious terminative focus:

(30) El presidente terminó de hablar a las ocho, 'The president stopped speaking at eight'

Now it appears that even though hablar is inherently non-cyclic

it can not in (30) signal inceptiveness as in (2) since the explicit marker of termination should logically create a cyclic event predicate. Likewise, the lexical signal of inceptiveness empezar in (31) can be seen to change what in null context would have been a cyclic event (getting up) into a non-cyclic event:

- (31) Empezaba a levantarme cuando ..., 'I was beginning to get up when ...'

In (31), since "habituality" is not relevant, I suggest that it must be the "backdrop" feature which triggers imperfect form. Thus, cases of lexical inception and termination seem to reverse the inherent cyclic or non-cyclic roles of the verbs they accompany. All this points to the following conclusions: 1. The idea of inceptive or terminative focus loses its descriptive usefulness when it accompanies certain other features (as in 26, 28, and 29); and 2. Because special cases need to be recognized in examples of lexical inception and termination (like 25-26 or 27-28 as opposed to 12-13), we could simply discard these notions so that, for instance, the difference between examples like (12) and (13) might be explained in the same way as that between (25) and (26). The essential difference between (25) and (26) would seem to have less to do with inception per se than with a notion which I will call "boundedness." For while in (26) the possible mention of an intervening action requires an unbounded context, this is not the case in (25). In (25), as well as in (12), we find a bounded event since in both a horizontal boundry may be inferred; i.e., no other event may take place within the context of (25) unless it occurs after the "end of eating;" no other event may occur in the context of (12) unless it is after the "end of speaking." Boundedness then pertains to the chronological progress of events within a narrative. Unboundedness halts the horizontal progress of events or states and permits their convergence at one temporal segment.⁹ Thus, there is also the possibility that one or more verbs may serve as backdrop.

2.1 I will henceforth refer to the aspectual feature choices already alluded to as [$\pm$ bounded], [$\pm$ habitual], and [$\pm$ backdrop]. But one other feature is also useful for discussing Spanish aspect; this is the "iterative" feature which is implied by habituality (although the reverse is not true). Note the following examples:

- (32) Rezó dos veces, 'He prayed two times'

- (33) Rezó dos veces diario por un año, 'He prayed twice daily for one year'

Now in (32) we see the following features: [+bounded], [+iterative], [-habitual], and [-backdrop]. Since the act is not done regularly and repeatedly it can not be habitual. Also, boundedness precludes the possibility of a backdrop feature. In (33), [+bounded], [+iterative], [+habitual], and [-backdrop], the act of

praying is clearly habitual since it is done daily for a year. This habituality feature distinguishes it from (32). If there were no repetition of the act we would have [+bounded], [-iterative], [-habitual], and [-backdrop] as in (34):

(34) Rezó esta mañana, 'He prayed this morning'

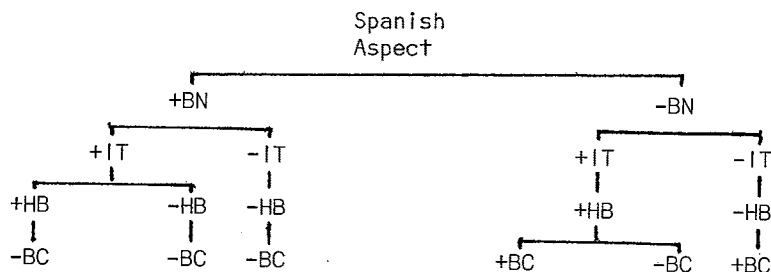
2.2 With cases of unboundedness we find three other possibilities. In example (35) se movía can be described as [-bounded], [-iterative], [-habitual], and [+backdrop]. Here, the act of "moving" serves as backdrop for the act of seeing:"

(35) Vi que la sombra se movía, 'I saw that the shadow was moving'

But it is also possible that iterativity, habituality, and backdrop may go together as in (36):¹⁰

(36) Siempre trabajaba cuando él me interrumpía, 'I was always working when he used to interrupt me'

Here, the habitual act of "working" serves as backdrop for the habitual act of "interrupting." In this case trabajaba can be described by the following features: [-bounded], [+iterative], [+habitual], but [+backdrop]. In contrast, interrumpía in the same example can be seen as [-bounded], [+iterative], [+habitual], but [-backdrop]. The feature choices [+bounded], [+iterative], [+habitual], and [+backdrop] are sufficient then to describe what I believe to be six aspectual situations where preterite or imperfect verb forms are pertinent. The following diagram showing the six choices involved abbreviates each label to its initial letter followed by its next consonant:



The above tree shows only one feature, [+bounded], to be exclusive to preterite. And, only one feature, [+backdrop], is exclusive to imperfect. The other two possible features may be represented with either preterite or imperfect form.

2.3 Now, let us examine a story fragment in order to illustrate the application of the above features. After each preterite or

imperfect use I employ a combination of plus and minus symbols representing the four feature choices in the order indicated above:

Felipe era -++- un hombre enfermizo que trabajaba -++- en una biblioteca. Aunque tenía -++- sus raíces en el campo, a los veinte años se había ido a la capital donde vivían -++- sus tíos. Aquel día abrileño se encontraba ---+ turbado pues la carta que esperaba ---+ tanto todavía no había llegado. Iba caminando ---+ por la avenida cuando de repente le sobrevino +--- un cansancio total. Se sentó +--- en un banco para descansar. Estuvo sentado +--- no más cinco minutos cuando se levantó +--- para marchar hacia su casa. Pero no había dado cinco pasos cuando alguien lo llamó +---. Era -++- don Pedro, el viejo que vivía -++- al lado. Don Pedro llevaba ---+ algo en la mano; era ---+ la carta.

Esa noche, Felipe volvió a leer ++-- la carta dos veces más. La carta decía -++- que su abuelo se moría ---+ y que quería ---+ que Felipe lo visitara lo antes posible. Felipe hizo +--- su maleta y salió +--- a la calle.

The first four simple verbs give strictly background (not backdrop) information since they represent recurring and habitual situations: era, trabajaba, tenía, and vivían.¹¹ The last situation, (donde vivían), rather than relating only the particular moment when he moved to the capital refers to where Felipe's aunt and uncle normally lived. Therefore, I do not assign it the backdrop feature either. Notice, for example, that a similar case, (37), could be interpreted either as a backdrop situation [---+] or simply as iterative and habitual [-++-] as shown by the differing glosses below:

- (37) Ella fue a donde trabajaba don Pedro, 'She went to where don Pedro was working [at that moment]', or 'She went to where don Pedro worked [normally]'

The sentence beginning with aquel día changes the focus to a particular moment within a particular day and the succession of verbs including encontraba, esperaba, and iba caminando shows a backdrop function for Felipe's being overcome by complete exhaustion. At this point begins a series of bounded events: sobrevino, se sentó, estuvo sentado, se levantó, and llamó. We may recall that in the Bull model this use of llamó would be considered inceptive since the action is prolongable; i.e. we might assume that the old man called out Felipe's name more than once. In the sentence beginning era don Pedro we see an equational use of ser (not an attributive use) which really equates in two directions: 1. el que llamó = don Pedro; and 2. el viejo que vivía al lado = don Pedro. Assuming that only if the other member of the

equation shows backdrop can the ser predicate be ascribed the backdrop feature, I have labeled both era don Pedro and vivía al lado as [-++-] which indicates recurring and habitual situations, not backdrop situations. In other words, era don Pedro does not serve as backdrop for llamó; instead, it relates a recurring and habitual situation (vivía al lado) that can be divorced completely from the act of calling. In the last sentence of the first paragraph we also see the equational function of ser: lo que llevaba en la mano = la carta. Here, however, era la carta equates with a situation showing backdrop, (llevaba algo en la mano), so both can be ascribed the backdrop feature.

In the next paragraph a bounded event, volvió a leer la carta, extends the horizontal flow of the narration. Since it is repeated we also indicate the iterative feature. The case of la carta decía is special since it could never be compatible with backdrop. If this were not the case, then by inserting cuando entré, (38) could be transformed into (39) which would have an obvious backdrop feature:

(38) La carta decía que ella era mexicana, 'The letter said that she was Mexican'

(39)*La carta decía que ella era mexicana cuando entré, 'The letter was saying that she was Mexican when I entered'

Normally, the use of decir with written matter excludes the possibility of backdrop.¹² Compare (38) to the ambiguous (40) where decía could be described as either [---+] or [-++-]:

(40) El decía que era mexicano, 'He was saying that he was Mexican' or 'He used to say that he was Mexican'

Note that by inserting cuando entré (40) can be transformed into the acceptable (41) which contains an obvious backdrop feature:

(41) El decía que era mexicano cuando entré, 'He was saying that he was Mexican when I entered'

The second sentence of paragraph two, in contrast, contains two cases of backdrop; both se moría and quería focus upon a particular moment in time. Lastly, the horizontal flow of the story is carried to its end with the two bounded events hizo su maleta and salió a la calle.

3.0 In this study I have examined the notions "inceptive" and "terminative" within the context of Spanish aspect. Despite the questionable basis for positing such notions I have found that it is difficult to disprove their validity without resorting to arguments based upon lexical inception and lexical termination. And if we equate lexical and grammatical inception or termination, we find that the description of Spanish aspect becomes subject to certain additional rules which burden the model. On the other

hand, I have proposed that all Spanish aspect situations can be described adequately and more simply through the use of four feature choices: [$\pm$ bounded], [$\pm$ iterative], [$\pm$ habitual], and [$\pm$ backdrop]. Perhaps such notions as inception and termination can be used to help identify bounded situations, however, they are certainly not necessary to a notional description of Spanish aspect.

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I gratefully acknowledge the permission granted by Georgetown University Press to quote from Guitart, 1978. (Copyright Georgetown University Press 1978)

NOTES

¹Although many verbs could be classified as inherently cyclic or non-cyclic such classification would have to be seen in terms of a null context; for while the event described by Juan comió can be considered non-cyclic, that described by Juan comió una pera must be considered cyclic.

²Originally (1960 and 1965) Bull emphasized the simple correlation of inception with non-cyclic events. In his coauthored textbook (see Lamadrid 1974: p.252) there is a mention of the possibility of preterite signaling that the whole non-cyclic event took place before the moment of speaking. As support for his belief that the focus of cyclic events is their termination, Bull (1960: p.45) argued that cyclic events can not be measured in the normal way; e.g., Se lavantó una hora does not mean that it took an hour for someone to get up.

³There is a reference by Bull (1965: p.168) to the role of context and non-cyclic events. It is not clear, however, whether Bull had in mind linguistic contexts like that of example (5).

⁴Guitart (p.147) calls conocer and saber "binomial predicates" stating that they refer inseparably to a state and to an occurrence; the preterite represents "post ingressiveness."

⁵There does exist at least the possibility of knowing for a block of time and then forgetting: Supe el número por cinco meses, 'I knew the number for five months.' Clearly, this use of the preterite of saber could not be interpreted as 'I found out.'

⁶This argument against inceptiveness was suggested to me by Tracy Terrell.

⁷Bull (1960: p.49) does employ lexical signals (terminar and dejar de) to indicate terminative focus in a special situation. Bolinger (p. 129) holds that empezar is initiative in whatever form, as he attempts to argue against inceptiveness in the preterite itself.

⁸This feature corresponds in general to Gili y Gaya's "imperfectu de conatu," p.161.

⁹For reasons of space I intentionally omit "back reference" as pertaining to horizontal progress. This of course is also possible and within the context of (25) would most likely be realized by pluperfect form. Unboundedness as I describe it is roughly compatible with Guitart's statement (p.141) that "every time we use IMP [imperfect] in referring to a specific occurrence we always mention at least one other experience or situation that took place or was taking place within the same stretch of time."

¹⁰In some dialects (36) would require the use of estaba trabajando instead of trabajaba.

¹¹Note that states like era enfermizo, tenía sus raíces en el campo, and donde vivían sus tíos can be seen to be recurring and habitual "situations" if viewed on a day to day basis. Non statives like trabajaba en una biblioteca are obligatorily interpreted as day to day.

¹²It may be possible to construct certain contexts where written matter serves as backdrop. For example, Cuando vi ese letrero el año pasado, decía "prohibido fumar," 'When I saw that sign last year it read "no smoking"' [But it has been changed!]

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SUBJUNCTIVE AND INDICATIVE IN BRAZILIAN PORTUGUESE

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This paper deals with a linguistic phenomenon in Portuguese that has traditionally been called 'mood', that is, the phonologically and orthographically distinct verbal inflections known as 'subjunctive' and 'indicative'.¹ The following chart exemplifies the modal system using the first person singular forms of the verb estudar 'to study' (forms cited in orthography, which reflects the phonology):

	mood:	<u>indicative (I)</u>	<u>subjunctive (S)</u>
tense:			
present		estudo	estude
past			
perfect		estudei	
imperfect		estudava	estudasse
pluperfect		estudara	
future		estudarei	estudar
conditional		estudaria	

Compound tenses, formed with auxiliary verbs such as ter 'have', estar 'be', or ir 'go' followed by participial or infinitival main verbs, work similarly, with the conjugated auxiliaries showing mood.

Notice that there are three subjunctive tenses, and the aspectual distinctions in past indicative are not present in past subjunctive, although the precise nature of the entire tense and aspect system of Portuguese awaits thorough linguistic analysis. In contrast with Portuguese, French has a past subjunctive of limited use and present subjunctive forms which often sound the same as present indicatives, differing only in spelling. Spanish has a present subjunctive, two sets of past subjunctives, and a future subjunctive which is almost never used, even in writing.

Another verbal distinction peculiar to Portuguese is also related to the subjunctive. Besides the familiar kind of infinitive which is not inflected for person, number, tense, or mood (as are conjugated verbs), Portuguese has a so-called 'personal infinitive' which is inflected for person and number only. For regular verbs, personal infinitives are formally identical with future subjunctive forms but this is not the case for most irregular verbs, as shown below:

impersonal infinitive:	estudar	ter
	(regular)	(irregular)
personal infinitive	estudarmos	termos
	(1st person plural)	
future subjunctive	estudarmos	tivermos

Traditional-style prescriptive grammars (e.g., Bechara 1977, Cunha 1972, and Thomas 1969) contain different amounts of lists and rules to describe mood, usually organized according to the author's interpretation of the contexts in which each mood is used. Grammars of this kind invariably refer in one way or another to a notion which I will here call 'government'. By government, I mean the idea that there are certain contexts which can be viewed as 'governing', 'taking', 'conditioning', or 'requiring' the use of either one mood or the other exclusively. Often semantic criteria are used to group these contexts, for example:

- (1) factuality, certainty, assertion, reality: I
 - a. Sei que ela comprou tudo. (I)
'I know that she bought everything'
 - b. É verdade que ela comprou tudo. (I)
'It's true that she bought everything'
 - c. Com certeza ela comprou tudo. (I)
'Certainly she bought everything'
 - d. Vou ficar em casa já que está chovendo. (I)
'I'm going to stay home since it's raining'
 - e. Vou ficar em casa porque está chovendo. (I)
'I'm going to stay home because it's raining'
- (2) doubt, uncertainty, non-reality, hypotheticalness: S
 - a. Duvido que ela tenha comprado tudo. (S)
'I doubt that she bought everything'
 - b. Talvez ela compre tudo. (S)
'Maybe she'll buy everything'
 - c. É possível que chova hoje a noite. (S)
'It's possible that it may rain tonight'
- (3) volition, desire: S
 - a. Quero que ela compre tudo. (S)
'I want her to buy everything'
 - b. Que Deus te proteja. (S)
'May God protect you'
- (4) subjective point of view: S
 - a. É bom que ela compre tudo. (S)
'It's good for her to buy everything'
 - b. Eles gostam que chova muito. (S)
'They like it to rain a lot'
- (5) special logical or temporal coordination: S
 - a. Vou sair contanto que não esteja chovendo. (S)
'I'm going out provided that it's not raining'
 - b. Vou sair antes que comece a chover. (S)
'I'm going out before it starts raining'

The assumption that certain contexts govern either I or S leads to the notion that choice of mood is somehow automatic in these apparently mutually exclusive environments. In such cases, mood is often viewed as not contributing to the overall meaning of the utterance, or, at best, carrying redundant information already conveyed by the governing expression. Câmara (1972:114) goes to the extreme of claiming that mood is a purely syntactic phenomenon with no semantic value at all.

But there are other types of contexts where either I or S can both be used. Except for Câmara, who speaks of semantically void 'free variation', choice of mood is usually considered meaningful in these cases, and would seem to help determine the interpretation of the entire utterance. I is taken to imply ideas like reality, factuality, habitual action, or reported information, while S conveys feelings of unreality, non-factuality, dubiousness, or volition, as the following examples illustrate:

- (6) a. Estou procurando alguém que me ajuda. (I)
'I'm looking for someone who helps me'
- b. Estou procurando alguém que me ajude. (S)
'I'm looking for someone to help me'
- (7) a. Farei como você quer. (I)
'I'll do it the way you want'
- b. Farei como você quiser. (S)
'I'll do it however you want'
- (8) a. Se vocês estavam aqui eu ganhava. (I)
'Whenever you were here I used to win'
- b. Se vocês estivessem aqui eu ganhava. (S)
'If you were here I would win'
- (9) a. Sugeriram que ele faz isso bem. (I)
'They suggested that he does it well'
- b. Sugeriram que ele faça isso bem. (S)
'They suggested [to him] that he do it well'

The notion of government, which has been with us since the times of the Greek and Latin grammarians, appears in transformational generative clothing disguised as 'syntactic conditioning'. Azevedo's (1971, 1976) analysis of the Portuguese subjunctive, limited to declarative sentences, is based on the concept of syntactic conditioning: he posits that the immediate syntactic context alone determines which mood occurs. Briefly, his analysis goes like this: in the generation or derivation of an utterance, a transformational rule inserting the element subj may be triggered by strict subcategorization features on other elements in the string. Verbs and adverbial conjunctions introducing subordinate clauses are subcategorized as [+ Subjunctive], while nouns are subcategorized with the feature [+ Determinate]. [+ Subj] and [- Det] trigger insertion of subj into the string, to come out later in the derivation as the proper morphological ending on the verb in the subordinate clause. [- Subj] and [+ Det] do not activate the rule and, presumably, the indicative ending shows up on the subordinate verb at some point.

Azevedo merely shunts the whole question of mood into some other more remote realm of his grammar. There is still the essential problem of exactly when, where, and how elements are subcategorized with particular features. Although his approach reflects the traditional distinction between governed ([+ Subj]) and meaningful ([+ Det]) uses of mood, it attributes little or no importance to semantic elements, such as tense or negation, which interact with mood to convey different meanings, as in:

- (10) a. Conheço uma moça que fala inglês. (I)
 'I know a young woman who speaks English'
 b. Algum dia conhecerei uma moça que fale inglês. (S)
 'Someday I'll meet a young woman who can speak English'
- (11) a. Acho que ela fala inglês. (I)
 'I think she speaks English'
 b. Não acho que ela fale inglês. (S)
 'I don't think she speaks English'
- (12) a. Contratei ela porque falava inglês. (I)
 'I hired her because she spoke English'
 b. Contratei ela não porque falasse inglês (S)
 mas porque era esperta. (I)
 'I hired her not because she spoke English
 but because she was smart'

Clearly, mood in Portuguese is primarily semantic and not syntactic in nature.

Most linguistic analyses of mood in Portuguese and Spanish do suggest that S and I convey different meanings. Semantic features or oppositions are posited such as [+ Experience], [+ Influence] (Moody 1975); [+ Reaction], [+ Presupposition] (Goldin 1974); [+ Assertion], [+ Presupposition] (Hooper and Terrell 1974); Assertion/Non-assertion (Klein 1975); Reality/ Non-reality (Tláskal 1976). These discussions concentrate on particular types of syntactic constructions (such as embedded noun or adjective clauses) and therefore do not account for the full range of data. Nevertheless, they are correct in following the principle that a difference in form signals a difference in meaning.

But the other side of this coin, underestimated by the above analysts, is that sameness of form indicates sameness of meaning. This assumption underlies the work done on grammatical meaning by Waugh and other Jakobsonian semanticists, Ruhl's discussions of lexical meaning, and many of Bolinger's linguistic studies (especially relevant are 1974 and 1976).

Waugh (1979) and Ruhl (1976, 1977, and 1979) explicitly point out that the meaning of any given form is by nature very general and consequently very abstract. As Waugh puts it,

language must be adaptable to a wide variety of situations and must in addition be flexible enough to adapt to new situations: it must allow creativity. From this point of view, then, the presence of general meanings in the linguistic system is necessary. They provide for and explain the wide variety of communicative possibilities afforded by the linguistic system. (191)

Ruhl speaks of "unconscious abstract meanings, highly general, which can not be paraphrased in conscious terms. In various contexts they can acquire specific meanings, but the contexts are so diverse that the specific meanings can not be viewed as examples of one unified sense." (1977.462) He criticizes the view that a single form can be polysemic, explaining that "Variation in meaning is not created by DISCRETE SEMANTIC options, but is the result of contextual inference, which is a PRAGMATIC CONTINUUM." (1979.94,

his emphasis) Both Ruhl and Waugh further emphasize that large amounts of data from a wide range of contexts must be examined in order to determine the general meaning of any given form.

Abstract general meanings are like spectrums of diverging specific meanings-in-context. Contextual meanings from different ends of a spectrum appear less related, hence more separate, but considering the spectrum as a whole reveals a gradient continuum of meaning. Once this abstract continuum is recognized, it becomes feasible to grasp how various contextual meanings fit in.

Of course, we always perceive and interpret things in context, never in isolation; this is a general principle of human behavior. There is no sharp division between linguistic and extra-linguistic knowledge: the same kinds of inferential strategies we use to figure out what's going on are also used to determine what's being said. Consider the spectrum of meanings provided by the term 'context' itself. There are many different overlapping dimensions of context: combinations of sounds, of words, of semantic concepts, of sentences, of discourse, of style, of speech situations, of personal situations, even of political situations. Human language use encompasses all these contextual dimensions and innumerable more, and it is not always easy to see where one dimension stops and another begins. Bearing in mind the crucial role context always plays in language use in general, one can imagine that a given language could have some special mechanism for underscoring contexts in particular instances.

Waugh explains the French subjunctive as just such a mechanism. She proposes that *S* conveys an element of meaning characterized as a semantic feature [Deictic Decalage], which is absent from the meaning of *I*, consequently unmarked for this feature. By 'decalage' she means that *S* indicates some sort of discrepancy or shift from normal predication as given by *I*. She uses 'deictic' in a technical sense beyond the term's usual meaning (a unit of information being defined from the point of view of the speech situation): the deixis encoded in the abstract general meaning of *S* involves an obligatory reference to context for appropriate interpretation of the predication given by the *S* verb.

S and *I* in Portuguese appear to be mechanisms similar to those Waugh describes for French. Personally, I prefer to avoid positing theoretical constructs or analytic artifacts whenever possible, so I am fairly uninterested in speculating about the technical role of things like semantic features, and more concerned with trying to understand the Portuguese modal system. Therefore, I simply offer the following prose explanation of how *S* and *I* are used by speakers, hearers, readers, and writers of Portuguese.

I is used for plain predication in which ordinary interpretation of lexical content with respect to context is sufficient. *S* signals that a particular facet of the context (linguistic or otherwise) is especially relevant for fully understanding the lexical content intended. *S* thus highlights an element of its context, indicating something like "Hey--there's something special about this predication--better refer to the context to find out

what this special ingredient is".

We are all very familiar with a linguistic mechanism which works much like S: the practice of underlining in writing. Depending on who's writing what type of discourse, underlining sets off words, phrases, or sentences from their non-underlined surroundings, calling attention to certain units of relevant implied information, sometimes conventionally understood but frequently improvised to suit the needs of particular moments. A few illustrations should suffice to show the gamut of additional information that can be conveyed: in bibliographies, sometimes books or journals are underlined; in linguistics papers, underlined words tend to be cited in foreign languages while underlined sentences often are examples being discussed; in many kinds of texts, chapter or section headings are underlined; often, in charts or tables, underlining indicates category names; in personal communications like notes or letters, writers can underline for emphasis.

Returning to the Portuguese verbal system, there are four principle means of predication, each with a differing degree of potential informativeness, as follows:

<u>infinitive</u>	<u>personal infinitive</u>	<u>indicative</u>	<u>subjunctive</u>
lexical content of verb	lexical content of verb	lexical content of verb	lexical content of verb
	person	person	person
	number	number	number
		tense	tense
		aspect	special rele- vance of context

A reexamination of the other descriptions of S and I in Portuguese and Spanish that have already been discussed reveals a major analytic problem they all share: failure to look for or see the whole abstract semantic spectrum of each mood. Analysts have gotten confused by concentrating on separating and defining individual meanings-in-context, and resorted to positing polysemy for each mood instead, especially for S. Referring back to the semantic concepts listed for the groups of examples in (1) through (5), notice the consequences of this confusion which has kept S and I from being analyzed on the basis of the assumption that sameness of form always indicates sameness of meaning, even if the meaning is vaguer than expected.

The more complex meaning of S, which emphasizes the special relevance of context to the predication, has been broken down into at least four classifications, which are merely particular points on the continuum of meanings-in-context: (2) doubt, uncertainty, non-reality, hypotheticalness; (3) volition, desire; (4) subjective point of view; (5) special logical or temporal coordination. The semantic classifications usually provided for I, i.e., (1) factuality, certainty, assertion, reality, reflect I's simpler meaning, which, in contrast to S, doesn't call into question any special significance of context. These characterizations are also

repeated when S and I are seen as providing contrastive meanings, as discussed for examples (6) through (9).

Often either mood is analyzed as implying the opposite of the semantic concepts which the other can manifest, even though both their abstract general meanings do not refer to such specific, contextually-induced variants. Exactly what is relevant in the context is not indicated by S; it merely points out that something besides the normal I interpretation of lexical content is an especially important component of the predication intended. Thus, although the general meaning of S doesn't itself refer to specific concepts like doubt, uncertainty, or volition, it is compatible with them. Likewise, I is related to lack of doubt, lack of uncertainty, lack of volition, which in turn seem to imply factuality and certainty, and vice versa. Clearly meanings-in-context overlap, just as contexts themselves do. This is at once a result of and evidence for a form's general meaning being an abstract continuum.

Even analysts who try to follow the 'same form--same meaning' principle often have trouble understanding how general meanings work. Confronted with the apparently mutually exclusive distribution of S and I in certain settings, they have resorted to misleading ideas such as syntactic conditioning or government. A favorite way out of this dilemma is to say that even though S and I have distinctive meanings in other cases, in these they are not the primary indicators of meaning or are redundant with respect to the meaning of the 'governing' expression. This solution does not respect the 'difference in form--difference in meaning' principle adequately.

Worse yet, this is all backwards: it is meaning which determines distribution and not the other way around. Grammatical (and lexical) items have more complex meanings than do phonological units, which merely convey that a given unit is itself and not some other one. If elements of grammatical meaning cannot commute in certain environments (the old 'minimal pair' test from phonology), this does not imply that they carry no meaning or less meaning than usual. If anything, their meanings are so strongly incompatible with those of the expressions they don't occur with that the likelihood of their ever combining is very small. Language users normally try to work with coherent chunks of information and because of this, people tend to produce and expect linguistic communication in which the sum of the parts produces some kind of reasonable whole, not a bunch of uninterpretable, contradictory, or incompatible meanings. What appears to be grammatical 'complementary distribution' is simply evidence of just this sort of semantic congruence or attraction at work, as in, for instance, (10) through (12) above.

These same examples also illustrate how 'complementary distribution' is rarely as clearcut as prescriptive rules indicate. Bolinger explains why:

The indicative-subjunctive contrast is a phenomenon in its own right. It does not depend on other structures except in a loose statistical way. The speaker

chooses the subjunctive morpheme as a direct reflection of his meaning, precisely as he chooses the word gato when he intends to speak of cats. And if he chooses, he may turn an expression that normally governs indicative into one that governs subjunctive--which is to say that in light of intentions we may not be dealing with grammatical government but with a set of more or less powerful tendencies. (1974.465)

Discernable patterns of probable grammatical usage are like collocational patterns of word use. Although people are generally free to use their language as they will, given normal communicational strategies, some words go together better than others, hence are more frequently used in combination (unless, of course, there is some reason not to, e.g., avoiding overused expressions or excessive ambiguity, wanting to be innovative, etc.). At some point these frequent combinations can turn into collocations or even idioms. So it is with mood as well.

Through ongoing experience with language use, the more common occurrences of S and I can become fixed in people's memories like grammatical clichés. People tend to use them more often than not, giving rise to probability patterns. Nevertheless, there is always the potential for creative idiosyncratic kinds of usage which are so often labelled 'anomalous', 'exceptional', 'irregular', and even 'incorrect'.

It also follows that different people have different usage patterns, which change over the course of time, and that the same person may have different patterns for productive versus receptive uses of language. I would even venture to suggest that any one person can comprehend far more types of usage patterns than he or she is likely to produce themselves. (This last sentence is a case in point.)

In the research on S and I which I carried out in Rio de Janeiro, I concentrated on observing how mood is used in normal, natural language use, in as many different kinds of contexts as was possible. I collected many instances of 'anomalous' data which are not really anomalous at all when considered in light of the analysis of Portuguese mood presented in this paper. Here are just a few:

- (13) O que eu não posso negar é que o estado dela seja (S) muito delicado. (TV soap opera doctor to patient's concerned family)

'What I can't deny is that her condition is very delicate' Non-denial being similar to affirmation, I is expected. Use of S highlights delicacy of both patient's condition and doctor's task of informing family.

- (14) Não quer dizer que ele prescreve (I) [as palavras que uso].
(student giving oral presentation in linguistics seminar)
'That doesn't mean he prescribes [the words I use]'

Denying-that-X is like affirming-that-not-X, so I can be used as in the negated I predicate ele não prescreve 'he doesn't prescribe'.

- (15) Versões de que [Golda Meir] sofre (I) de leucemia foram desmentidas pelo hospital. (newspaper article)
'Rumors that [Golda Meir] is suffering from leukemia were denied by the hospital'

By using I, which is unexpected with denials, author of article gets across the idea that the rumors are in fact true.

- (16) É impressionante que eles não entendem (I) [nada].
(said in conversation about politicians)
'It's amazing that they don't understand [anything]'

Although S is customary with expressions of opinion, this speaker stresses what he sees as a fact about politicians rather than his opinion of them.

- (17) Talvez é (I) um termo inadequado. (lecturer closing debate from floor in which term in question was conclusively shot down)
'Maybe it's an inadequate term'

By using unexpected I, the 'doubt' meaning of talvez is attenuated, allowing speaker to concede to majority opinion while still maintaining own integrity.

- (18) É certo que pinte (S) sim. (fellow promising his friends to get hold of car to take someone to airport)
'For sure it'll maybe come through'

Certainty normally pairs with I, but by using S here speaker goes for a semantically-incongruent meaning of 'definitely/probably', affirming his intention to act and simultaneously allowing for the possibility of not succeeding in getting car.

- (19) [Finalmente] encontrei alguém que me desse (S) o dinheiro.
(woman discussing debt she was having trouble paying off)
'[Finally] I found someone to give me the money'

Determinate entities normally take I, but S here seems to be emphasizing speaker's long search rather than the person she found.

- (20) Eu sempre era um cara que jogasse (S) [muito bem].
(semi-famous soccer player in TV interview)
'I always was a guy who could play [very well]'

One's own person is surely determinate, but S here may be due to speaker's attempt to concur with favorable appraisal of himself while appearing modest and humble at the same time.

To conclude this presentation on a metatheoretical note, I would like to point out the counterproductiveness of trying to first categorize a phenomenon as being purely syntactic or semantic (or morphological or phonological, for that matter), and then trying to analyze it on the basis of preconceived artificial levels of linguistic analysis. Such notions must be discarded in favor of approaches which consider linguistic phenomena on their own terms and only then come up with the appropriate analytic labels. In this analysis, I have attempted to look at mood in Portuguese from just such a relatively unbiased perspective.

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SOUTHERN PAIUTE STRESS AND RELATED PHENOMENA

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Edward Sapir in 1930 published a grammar of Southern Paiute which included an excellent phonology. In his treatment of the language, he proposed an account of the processes eliding and devoicing vowels that very much resembles work done in the metrical framework that is finding wider and wider application in recent generative phonology. Briefly, Sapir suggested that words in Southern Paiute are composed of morae, which are assigned alternate values of strong and weak. For Sapir, morae are not equivalent to syllables, though they are typically equivalent to simple underlying vowels, or potential syllabic nuclei. Stress is associated with strong morae, primary stress with the first strong in a word. Weak morae are subject to vowel-reduction processes such as deletion and devoicing. In (1), we have an example from our data which illustrates how Sapir's system works:

- (1) w s w s w s w w
i ya pa ka- ti- kan ti- ni
be scared-causative-perfective-participle-I/me
scared me
i

Disregarding the fact, discussed below, that final vowels are regularly weak in Southern Paiute as noted by Sapir, we assign strength to the second vowel, or mora, and to each successive even vowel. Thus, along with his formulation of rules governing devoicing of vowels, this simple metrical analysis will account for the actual pronunciation of (1):

- (2) iyápakàtikàntĩni
o o o

Our goal in this paper is neither to rehash Sapir's analysis in a new formalism nor to prove Sapir's statements wrong. We would like to recast Sapir's observations in a more fully developed metrical framework that will lend them greater motivation and illuminate aspects not previously apparent, such as levels of stress and the relation of metrics to syllable structure. Going beyond Sapir, we further wish to characterize in terms of our framework differences in Sapir's data and our own, two dialects which represent a time differential of three generations due to Sapir's informant's unusual upbringing; we would like to determine the domain in which word metrics operate in Southern Paiute; finally, we will discuss residual problems in Sapir's data that may receive an explanation in our framework.

ism that will clarify the notion of prominence.

Ken Hale and Josie White Eagle in their (80) treatment of stress in Winnebago, a Siouan language, adopt the convention of a dividing line across the tree between the word-level, where the terminal nodes are the initial nodes of feet, and the foot-level, where the terminal nodes are vowels, syllabic nuclei. The division is useful in their description for two reasons, the first being that at the foot-level trees are built from right to left, whereas at the word-level, they are built in the same manner as at Southern Paiute's word- and foot-level, left to right. The second aspect of the formalism's usefulness makes it useful in Southern Paiute, too. The prominent syllable in complex feet is dominated by more strong nodes below the dividing line than is the corresponding syllable in simpler feet. This does not however make it more prominent at the word-level. Once prominence is determined at the foot-level, relative prominence within the word is determined by the tree structure at the word-level, above the line.

Let us state the conventions adopted thus far. We assume as general theory that trees are built on the principle of the diad, that at any level, one and only one strong terminal node must be found under an initial node, and that all terminal nodes at any level must be associated into the metric structure. It follows that every foot will contain one and only one strong syllable, and every word one strong foot. Aside from these assumptions, the following conventions are proposed for Southern Paiute. They are intended to apply whenever their conditions are met, to adjust ill-formed structures and also serve as well-formedness conditions on structures needing no changes. Note that (8) subsumes the usual foot-formation rule; we state it here as a peculiarity of Southern Paiute because of Hale's and White Eagle's analysis, which it would contradict if a general principle. Such differences may represent differences of typology.

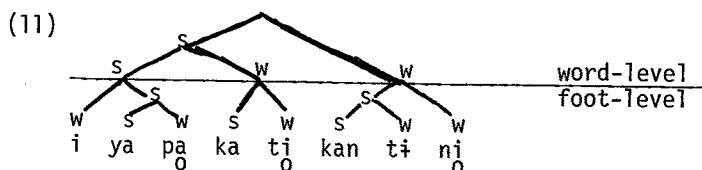
- (5) General Labeling Convention (GLC): a) The second vowel in a word is labeled S; b) each succeeding second vowel after the initial S is labeled S. (All others are W, of course.)
- (6) Final Vowel Weakening Convention (FVWC): All final vowels are W.
- (7) Word-Level Labeling Convention: The left-most foot is labeled S.
- (8) Left-to-Right Convention (LRC): At each level, begin building trees by attaching right-ward Ws to the preceding S, one at a time, until all are attached. (Others are associated by general principles.)

Although not extrinsically ordered, the above rules will apply in the order given since the conditions for each in most cases are created by the preceding rules. The following segmental rules are given. These rules are taken to apply to strings that have met the conditions above and have been assigned a metric structure by them. As (9) changes syllable structure, at least those conventions operating on syllables will have to be met by the output.

- (9) Final Vowel Deletion: $w \rightarrow \emptyset / _ \# \# X$, where $X \neq \emptyset$.
- (10) Vowel Devoicing: $V \rightarrow \begin{matrix} V \\ 0 \end{matrix} / _ \begin{Bmatrix} [-\text{son}] \\ [-\text{voice}] \end{Bmatrix} \begin{matrix} S \\ V \end{matrix}$, where s is a phrase boundary or pause.

Rule (9) deletes word-final weak vowels where no pause follows. (10) devoices weak vowels finally before a pause or internally before a voiceless obstruent. Later it will be seen that (10) only applies foot-finally and foot-initially, before a strong syllable.

Armed with (9) and (10) and the above metric principles, we can provide the the complete metric structure of (1) as shown in (11):



Sapir was only concerned with primary stress, which as the structure in (11) indicates falls on the second syllable. Other stresses for him were undifferentiated secondary stresses and not indicated. However, note that the second foot though weak forms part of the strong node that is opposed to the following weak foot. If this is taken as an indication of relative prominence among secondary stresses, then in any word, each succeeding foot will be less prominent than the one before it. This, we believe, accounts for the step-tone effect with stressed syllables in Southern Paiute. The primary stress generally falls on a high tone; secondary stresses terrace down from high to low-mid register. As word-level metrics are completely regular in Southern Paiute, we will henceforth omit the structure above the line; it must be assumed to be there, however.

In the following data, (12), it is clear that when two vowels fulfill the conditions of rule (10), only the second may delete:

- (12) a. *naxúk^wip_oi_o
 'fight'
- b. naxúk^wip_oi_o

Whether we should formulate separate rules for internal and final devoicing or whether we can relate this to the principle of relative prominence among weak forms discussed above is not clear to us at this point.

The rules as now formulated will account for the vast majority of our data on word-stress and vowel reduction. Before we consider actual exceptions to our analysis, let us look at some interesting aspects of this part of the metrics, including the limits of the metric word itself. One very interesting aspect is the treatment of bisyllables. All bisyllables, even those formed

from otherwise unexceptional roots, are stressed on the first syllable, an apparent contradiction to our analysis. The following examples are representative:

- (13) a. k^wipa
 fall^oor hit
 b. imi
 ^o
 you (nominative)
 c. $kāni$
 ^o
 house (bare stem or nominative)

In bisyllables, the first part of the GLC and the FVWC are in conflict; the GLC loses out, as in other cases, as we shall see below. However, according to the general principles of our theory, bisyllables must be assigned a metric structure at the foot- and word-levels. If the GLC does not apply, and if the final vowel cannot be strong, then the first vowel must be strong by default. Otherwise, an illicit foot composed entirely of weaks will occur. We will not formulate this adjustment as a separate convention, since we believe it is implicit in the basic assumptions of the theory.

Stress-shift occurs in Southern Paiute when syllables are added by the morphology either before or after a root, as in (14):

- (14) a. k^wipa
 ^S ^W
 ^o
 b. $k^wipa-ny$
 ^S ^W ^S ^W
 fall/hit-momentaneous
 c. $na-x^wipa-kanti$
 ^W ^S ^W ^S ^W
 na-x^Wipa-kanti^o
 reflexive-hit-perfect participle

Each metric structure requires that a different syllable of the root, / k^wipa /, achieve prominence.

An important question to ask at this point is what combinations constitute the domain of word-metrics. Besides the strings created by derivational and inflectional morphology, other processes attach morphemes more or less strongly to otherwise independent words. Enclitic pronouns and modals, postpositions, and articles may be attached to any word in the phrase where they "belong" syntactically and semantically. As may be seen in (15) (a and b), as compared beside (13), enclitics and postpositions count as part of the metric word. Note, however, that in (15) (c) the postposed article not only does not affect stress, that is the GLC, it also allows the FVWC to apply and triggers Final Vowel Deletion.

- (15) a. $kāni-naxa$
 ^o
 house-within

- b. imí-₀ana
 you(nom.)-he/him
- c. kán-úr
 house (nom.)-article

If a sequence of enclitics is long enough, or if a long compound postposition is used, then secondary stresses will fall among its syllables:

- (16) $\begin{array}{ccccc} & \swarrow & \searrow & \swarrow & \searrow & \swarrow & \searrow \\ W & S & W & S & W & S & W \\ p\acute{ic}ucux & w\grave{a}-y\acute{i}- & k^w\grave{a}-ni \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \text{know-present-it-I/me,} & & \text{'I know it'} \end{array}$

Let us summarize before considering data that are truly exceptional to the analysis thus far proposed. We have seen that having adopted the metrical theory developed by Liberman and Prince and incorporating formalizations of Sapir's observations into a metrical analysis of Southern Paiute, we can not only predict stress in the cases that follow from Sapir's analysis, we can also predict stress in bisyllables, and the relative stress of weak feet. We have determined that the metric word in Southern Paiute consists not only of roots, or compounded roots, plus prefixes and suffixes, it also includes any enclitics and postpositions. We have in part determined the interface between metrics and segmental phonology of vowel reduction.

Let us turn now to examine two classes of exceptional forms with regard to the GLC. The first class is composed of morphemes that appear, for no reason that can be attributed to their synchronic form, with idiosyncratic stress placement. One group of roots, many of which were well noted by Sapir, take stress on the first syllable when the root is word initial. The rest of the word is normal except that the second part of the GLC behaves as if there were an extra initial syllable, which was the case with a good many of the roots, as Sapir has pointed out. Others are loan-words from English which, of course has many such words. (17), below, gives examples of both:

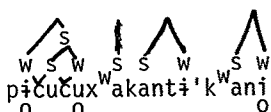
- (17) a. p^ví-₀kànti-₀
 arrive-perfect participle
- b. cíkinànsi-₀
 chicken

Another group of such morphemes is exceptional with regard to the second part of the GLC. As Sapir does not mark secondary stress and as devoicing is less common in his data word internally than in our own, due to the recent enhancement of Southern Paiutes inventory of voiceless obstruents word-internally, it is extremely difficult to determine whether the following exceptions were such

in his data. In our own data, we discover that the momentaneous suffix, /*ŋu*/, is always weak. More importantly, the tense suffixes except for the present, /*y*:/, all display their own peculiar stress pattern regardless of the metric structure of the preceding material. They are clearly part of the metric word as they bear typical secondary stress, albeit in the wrong place sometimes. These suffixes are: /*kānti*/, the perfect participle, /*pīxāi*/, the narrative past, /*pīxānti*/ the narrative past participle, /*vāni*/, the future, /*vānti*/, the future participle. The following are examples of this idiosyncratic behavior:

- (18) a. *pīč₀pīxāi* 'arrived'
 b. *pīč₀ū₀cux₀wakānti*'*k₀wāni* 'I knew it'
 c. *tonāvāni-āpa* 'he will punch' or 'will punch him'

The idiosyncratic placement of the strong syllable in the suffix and the subsequent behavior of stress in the enclitics following is probably a remnant from the time when these were independant auxiliary verbs. We shall deal with them as marked lexical exceptions and assume that the GLC applies as it normally does in such words until it gets to a suffix already labeled lexically. The convention then applies to the rest of the word as if it, itself, had labeled the offending suffix. This solution will also work for roots with lexical initial stress. Thus, (18) (b) would receive the following metric structure:

- (19) 

The fourth syllable is forced to stand alone, much as would a monosyllable, having no following weaks.

The final class of exceptions consists of words containing the diphthongs, /*ai*/ and /*au*/, or geminate vowels, glottalized or unglottalized, and are an example of how syllable phonology can influence metric structure. These double-vowel sequences also constitute a major point of difference between Sapir's data and our own.

It is often the case that geminate vowels or diphthongs are treated ambiguously in the phonology of a language, as both one long segment and a sequence of two. However, in Sapir's data the ambiguity approaches perversity. The metric conventions treat such sequences as single vowel segments as the two vowels are never assigned to separate feet. Further, they share stress, though in the case of diphthongs this is obscured by the fact that appearance of the high second vowel as a glide causes the stress to appear shifted onto the preceding low vowel, when that vowel would normally be weak. What is most unusual, if not dubious, is Sapir's claim that regardless of shared or apparently shifted stress, each vowel retains its assigned value of S or W. What

follows from this claim is that the second member of such sequences devoices or does not devoice when the other conditions of the devoicing rule are met depending on what value the GLC would have assigned it. The ambiguous strength value of the second member of the diphthong is an aspect of Sapir's data that we cannot handle and are, in fact, not sure we should try. If a vowel reduces to a glide, we would like to believe that that implies a weak metric value: this would correspond to an automatic stress shift. However, for a vowel reduced to a glide to still carry strength, as Sapir claims, is questionable. Rather than juggle rules to account for this, let us consider the case from the standpoint of our own data.

In our data the question of ambiguous strength in diphthongs never arises as word-internally long vowels and diphthongs are not subject to devoicing. Word-finally, the second half of a two-vowel sequence simply deletes under all circumstances. The data of (20) illustrate these facts:

- (20) a. p̄n̄í-t̄i-kà (₀ < p̄n̄it̄ikai)
 see-causative-perfective
 'show'
 b. amp̄áx̄a-t̄íí-k̄ant̄í (₀ ₀)
 talk-passive-perfect participle
 'was talked about'

As an aside, in our data geminates when under primary stress may break into two syllables with the second strong or stressed. This is true in Sapir's data only of glottalized vowels. (21) illustrates the possibilities in our data:

- (21) a. k̄íí-k̄ant̄í (₀ or k̄íí-k̄ant̄í (₀)
 picked up
 b. wa'ápi (₀ or wáápi (₀)
 cedar

This optional disyllabic treatment of long vowels yields forms identical to the standard configuration. This is much more common among glottalized long vowels.

To account for the facts as they stand in our data, we propose the following tentative solution. Clearly, we need to be able to treat sequences of vowels as two in order to account for proper labeling of syllables following such sequences in a word. On the other hand, in order to avoid assigning what is essentially one syllabic nucleus, in the case of geminates, or a nucleus plus a coda, in diphthongs, to two different feet, we need one or more syllable structure constraints to analyze such sequences as having no syllable boundary between the two members. This would also account for shared stress in geminates and if we presume a

segmental glide-formation rule applying to the output of metric and syllabic constraints it will account for shifted stress in diphthongs. There arises the question if we adopt this solution of whether the metric constraints apply to syllable nuclei or simply to vowels, as they are worded above. If they do apply to syllable nuclei, then we will have to allow a level of syllables that does not necessarily correspond to surface-occurring syllables. At this point, we have no answers to these questions, though it is clear that the syllabication of words whose final vowels have been deleted is not the same as those to which this process has not applied.

By way of concluding this paper, we would like to consider what avenues lie open for further research in this area of Southern Paiute Phonology. Certainly, the next thing to examine, given the framework we have adopted, should be intonation and phrase-stress. We have noticed that focus constituents do not occur late in the sentence in Southern Paiute as they do in English in many cases. Focus usually falls on the initial word or phrase node of the sentence. Thus, at least structurally, it is quite possible that phrase-stress is analogous to word-stress, and to prominence within the foot; that the trees are, in Hale's and White Eagle's terms, all left-branching. We have also worked with versification in Southern Paiute, but have reached no conclusions yet.

Hale, Kenneth, and Josie White Eagle. 1980. A preliminary metrical account of Winnebago accent. *IJAL* 46.117-132.

Liberman, Mark. 1978. The intonational system of English. Bloomington, IN: IULC.

Liberman, Mark and Alan Prince. 1977. On stress and linguistic rhythm. *LI* 8.249-336.

Sapir, Edward. 1930. Southern Paiute, a Shoshonean language. in *Proceedings of the American Academy of Arts and Sciences*, 65.

Schane, Sanford. 1979. The rhythmic nature of English word accentuation. *Lg.* 55.559-602.

SYSTEMIC PHORICITY IN THE OLD ENGLISH NOMINAL GROUP

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In a previous paper I have proposed a systemic description of Old English nominal groups in terms of surface structure and system networks related to the Hallidayan metafunctions "experiential" and "logical" (Cummings 1980; cf. Halliday 1977/78: 128-133). That description was based on a single Wulfstan homily, *Sermo Lupi*. The purpose of the present paper is to extend the description of surface structure to cover data provided by four Wulfstan homilies, and to propose a system network, based on this data, which relates to the metafunction "textual". This network gives an account of phoricity. The corpus underlying the description consists of about 650 nominal groups and nominal-group complexes realized by more than one word, and about an equal number of one-word nominal groups. The homilies are Bethurum 3, 5, 20 (*Sermo Lupi*) and 21, which have long been recognized as a stylistic unit representing Wulfstan's exercise of the "grand" style (Bethurum 1957: 89).¹

As in the case of systemic accounts of the modern English nominal group, a surface description of the Old English nominal group begins by distinguishing the nominal group itself from the nominal-group complex. The complex of any unit can be a paratactic or hypotactic ordering of two or more units of the same rank which realize the same element in the structure of a unit of higher rank. The view taken here is that the complex of any unit belongs to the rank scale (but cf. Berry 1975: 104-105) and that every unit realizes an element in the structure of its unit-complex, which in turn realizes an element in the simple unit next above on the rank scale. Consequently every simple unit realizes the element α (or β , if hypotactic) in its unit-complex. For simplicity's sake, however, the terms "nominal-group complex" and "word-complex" will hereafter be used to designate only those complexes realized by more than one unit.

The morphology of the Old English nominal group, like that of its modern reflex, distinguishes a non-optional *head* (*h*) element from optional premodifier and postmodifier elements. The premodifier element may be resolved into a string of separate, optional elements designated *determiner* (*d*), *epithet* (*e*) and *nominal* (*n*). These elements are typically realized by word-class items *deictic*, *adjective* and *noun* respectively. In addition, the element *r*, realized by *adverb*, may occur as a premodifier for *h* elements typically realized by adjectives and determiner words.

The postmodifier element may be resolved into a string of separate, optional *qualifier* (*q*) elements, typically realized by rankshifted clauses and even nominal groups, but also frequently by single word items.

Within this general framework, the whole range of surface structures and realizations in the test corpus can now be itemized.² The range of structures and realizations for *h* element is the same as that for *Sermo Lupi* alone. The *h* element is normally realized by a single word, typically a noun; but it may also be realized by pronoun, adjective, participle or determiner word items. When the *h* element is realized by a word-complex, the word items are restricted to noun, adjective and determiner items. The following examples demonstrate this range:³

1. Dis godspel (3-4) 2. us eallum (3-6) 3. gelic þam (3-44)

$\begin{array}{c} \alpha \\ \swarrow \quad \searrow \\ d \quad h \end{array}$
("This gospel")

$\begin{array}{c} \alpha \\ \swarrow \quad \searrow \\ h \quad q \end{array}$
("us all")

$\begin{array}{c} \alpha \\ \swarrow \quad \searrow \\ h \quad q \end{array}$
("similar to that")

4. swyðe toslopene (5-46) 5. þæt þæt we scoldan (3-31)

$\begin{array}{c} \alpha \\ \swarrow \quad \searrow \\ r \quad h \end{array}$
("much slackened")

$\begin{array}{c} \alpha \\ \swarrow \quad \searrow \\ h \quad q \end{array}$
("that which we should")

6. orf 7 aeceras (3-39) 7. swytol 7 gesyne (3-16)

$\begin{array}{c} \alpha \\ | \\ \alpha \quad h \quad \alpha \\ | \\ + \end{array}$
("cattle and fields")

$\begin{array}{c} \alpha \\ | \\ \alpha \quad h \quad \alpha \\ | \\ + \end{array}$
("clear and visible")

8. lytel ne micel þæs þe gelagod is to gedwolgoda weorðunge (20-26)

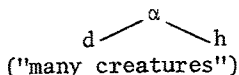
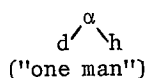
$\begin{array}{c} \alpha \\ | \\ \alpha \quad h \quad \alpha \\ | \quad \swarrow \quad \searrow \\ + \quad \alpha \quad \alpha \end{array}$ $\begin{array}{c} \alpha \\ | \\ q \quad \alpha \\ | \quad \swarrow \quad \searrow \\ h \quad \alpha \quad q \end{array}$
("neither little nor much of that which is ordained for the worship of idols")

Word-complexes may also be distinguished structurally as single-layer (exs. 6, 7), multi-layer (ex. 9) and modified complexes (ex. 8).

9. here 7 hunger, bryne 7 blodgyte (20-56)

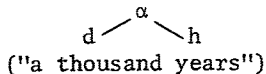
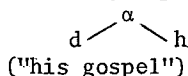
$\begin{array}{c} \alpha \\ | \\ h \\ | \quad \swarrow \quad \searrow \\ \alpha \quad \alpha \quad \alpha \\ | \quad | \quad | \\ + \quad + \quad + \end{array}$
("devastation and famine, burning and bloodshed")

20. an man (20-177) 21. manege gesceafta (3-35)

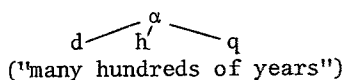


However the same word items at *d* may also be unmarked for case:

22. his godspelle (3-22) 23. þusend gearum (5-43)

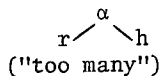
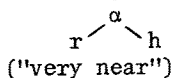
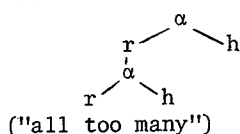


24. fela hund wintra (5-92)



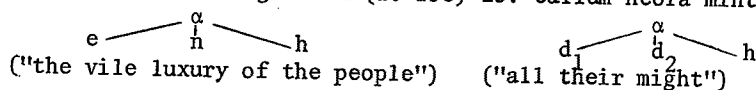
Atypical realizations of the *h* element which colligates with element *r* include participles (ex. 4) and adverbs (ex. 25), in addition to typical adjective and determiner word (exs. 26, 27).

25. ealles to manege (5-77) 26. wel gehende (5-46) 27. to manege (5-20)

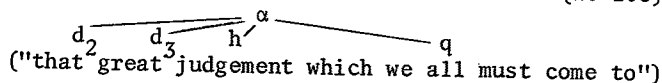


Sequence types in the four homilies support the supposition that premodifier elements are ordered as *d e n* before *h*. A large number of groups have the structure *d e h* (ex. 19), in which the *e* element is realized by adjectives and participles, and the *d* element by *his* ("his"), the demonstratives, *micel* ("much/great"), *manig* ("many"), *eal* ("all"), or even in one instance a noun in the genitive. One group in the whole corpus has the structure *e n h*, with *e* realized by adjective and *n* by genitive noun (ex. 28). In addition, these homilies show that *d* element may be resolved into ordered elements *d*₁ *d*₂ *d*₃. One set of groups (ex. 29) distinguishes *d*₁ realized by *eal*₃ ("all") from *d*₂ realized by *his* ("his"), *heora* ("their"), the demonstratives, and possibly *oðer* ("other"). Another set (ex. 30) distinguishes *d*₂ realized by the *se/seo/þæt* demonstrative ("the/that"), of *his* ("his") from *d*₂ realized by *micel* ("much/great"), *aenig* ("any"), *endenyhst* ("last") and superlatives. One group with a cardinal numeral at *h* and a *d*₂ premodifier suggests that cardinals may also be classifiable as *d*₂. Many other determiner words in the corpus cannot be sequentially classified.⁴

28. fulne...folces gaelan (20-193) 29. eallum heora mihtum (3-53)

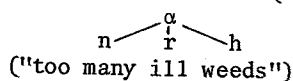


30. þone miclan dom þe we ealle to sculon (20-208)



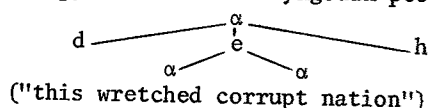
Structure types for premodifiers thus include one-element and two-element types; both have been amply illustrated, except for groups showing the sequence *n r h* as in:

31. unweoda to fela (3-41)



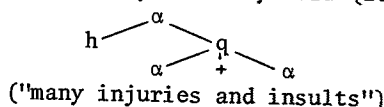
Other structure types include rankshifts (exs. 16, 17, 25), which occur at all premodifier elements, and word-complexes:

32. þysse earman forsyngodan þeode (20-175)

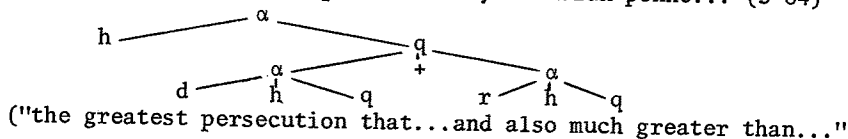


Structure types at *q* element include word item (exs. 2, 3, 24) and word-complex (ex. 33) realizations, rankshifted nominal groups (exs. 8, 19) and group-complexes (ex. 34), prepositional groups (ex. 35), clauses (exs. 5, 8, 17, 30, 34) and clause-complexes.

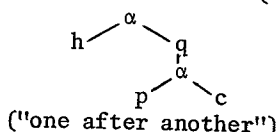
33. fela byrsta 7 bysmara (20-15)



34. ehtnesse þa maestan þe...7 eac mycle maran þonne... (5-84)



35. an aefter anum (20-90)

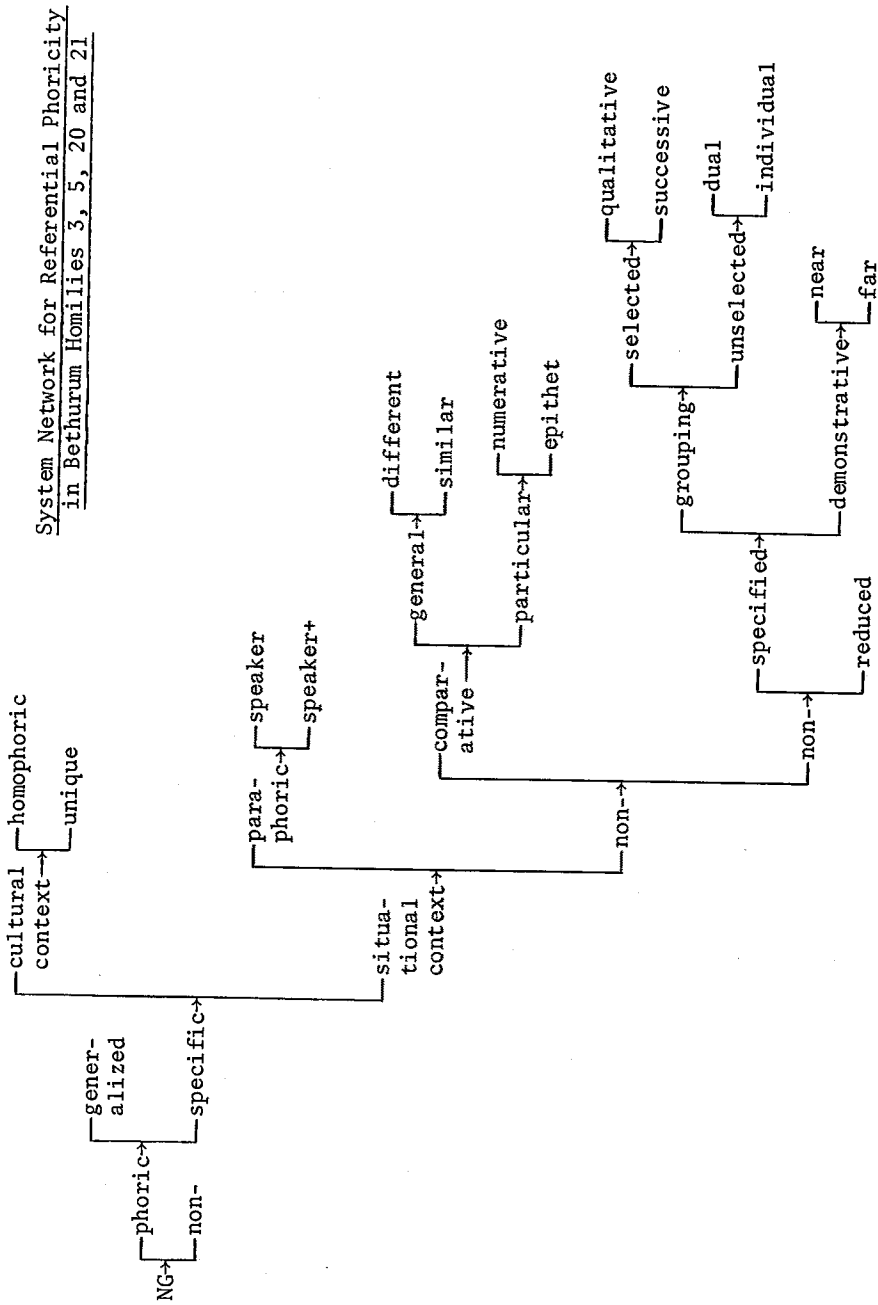


Word items are adjectives, participles, determiners and even nouns in the same case as the *h* element; but typically the noun realization is genitive, and this is the only form of word exponent in the word-complex type. Other word items include adverbs, and determiner words in dative case. Rankshifted nominal groups include those with nouns and determiner words at *h* element; the nouns may be genitive, dative or the same case as the *h* of the embedding group, while the determiner words may be genitive, unmarked for case, or the same as the embedding group's *h*. The group-complexes also have only nouns and determiner words at *h*, and these are limited to the same case as the *h* of the embedding group. Clause realizations include relative clauses; *þaet* clauses; comparative clauses with *swa* ("as"), *swylce* ("as") and *þonne* ("than"); and inflected-infinitive clauses. Multiple *q* elements include realizations by word and nominal group, word and clause, and prepositional group with word-complex.

Group-complex structures are entirely the same as described from the *Sermo Lupi* data alone, consisting of multi-layer and single-layer types. In the latter all elements contain multi-variate structures; or one element only does not, and this in some cases is realized by a word-complex (Cummings 1980).

The system grammar for these nominal groups starts from the premise that the semantic category "textual" is partially realized in the nominal group by the grammatical feature "phoric". Any nominal group which is grammatically phoric can be said to "presuppose" information, either in the context of situation, or in the co-text. Grammatical phoricity can be recognized as reference, substitution, or ellipsis (Halliday and Hasan 1976: 2 ff.), but I will limit the discussion to referential phoricity. Referential phoricity or reference presupposes the identity of the referent in the context or co-text, without presupposing a particular structural realization. Other types of grammatical phoricity do presuppose a particular structure, eg., the substitute item *one* in modern English may presuppose a particular structural item in the co-text (Halliday and Hasan 1976: 31-32). The following account of reference in the nominal groups of Bethurum homilies 3, 5, 20 and 21 proposes feature labels for phoricity which are organized in a network of systemic choices (see next page) and realized in particular surface structures belonging to types already described. The terminology and criteria for reference are based on those of Halliday and Hasan (1976), and Martin (1976), to whom I am particularly indebted for network configurations.

The initial choice in the system network is between referentially *phoric* and *non-phoric* nominal groups. Exs. 1-3 show reference overtly realized in demonstrative *Dis*, 1st-person pronoun *us*, and comparative adjective *gelic*, respectively presupposing a lection which has just been completed, the existence of the speaker and audience in the immediate situation, and a



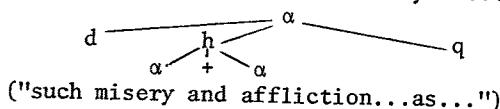
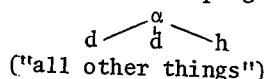
metaphorical similitude. Exs. 4, 6, 7 *etc.* by contrast contain no markers of reference at all. Nominal groups which are phoric are said to be so in terms of their *primary phoricity*, which involves the referential identity of the *h* element, and excludes any other referential identity, which may be realized in the same nominal group as a modifier. Thus the demonstrative *þam* of ex. 3 has no bearing on the primary phoricity of the group.

Some referential nominal groups are said to have *generalized* referential phoricity. This form of reference is to human agency in general (realized in modern English by "one"), or to circumstance in general (realized in modern English by "it"). In the homilies the exponents of this rather special case are *man* (*Ne man God ne lufað swa swa man sceolde . . .*, "Nor does one love God as one must . . .", 5-29) and *hit* (*. . . cymð . . . fyr ofer mancygn, 7 ðaerto hit nealaecð nu . . .*, ". . . fire will come upon mankind, and it nears to that now . . .", 3-8). All other referential nominal groups are said to be *specific* (Halliday and Hasan 1976: 44 ff.).

Nominal groups with the feature specific phoricity may presuppose their referent either in a *cultural context* or an immediate *situational context*. The latter includes both the immediate non-verbal situation and the co-text. The former refers to groups which presuppose identities in the light of the general knowledge of a cultural community. These in turn are labeled either *homophoric*, which mark with the *se/seo/þæt* demonstrative (*Seo heofone*, "the heavens", 3-38), or *unique*, realized by proper nouns (*urum Drihtne*, "Our Lord", 3-16). Nominal groups referring in a situational context may be either *paraphoric*, which pertains to speech role, or *non-paraphoric*. Paraphoric groups refer either to the *speaker*, (*ic/we*, "I"/"we") or to the speaker and some others, *viz.*, the congregation and the rest of the English nation. The latter is realized by a form of *we* ("we"), *we ealle* ("all of us") as in ex. 2, or *we sylfe* ("we ourselves") and labeled *speaker+* (cf. Halliday and Hasan 1976: 44 ff., 71; Martin 1976: 10-12).

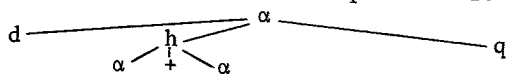
Non-paraphoric groups may be either *comparative* or *non-comparative*. Comparative reference pertains to a degree of likeness or proportion between presupposed and presupposing. Comparative groups are either *general* or *particular*. The former express likeness or unlikeness as a generality, without limiting it to some property. Groups which are generally comparative may therefore be labeled *different* or *similar*. In the homilies, comparative groups with the feature *different* are limited to those with *ofer* ("other") as *d* or *h* element (ex. 36). Groups with the feature *similar* often have *swylc* ("such"), usually as a *d* element before a noun *h* element, more rarely as the *h* element itself (ex. 37). Otherwise such groups are realized by a form of *gelic* ("similar") at *h* and a modifier (exs. 3, 17).

36. ealle oðre þing (3-77) 37. swylc yrmð 7 earfoðnes...swylce... (3-58)



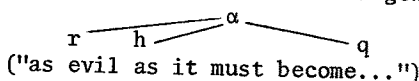
Particular comparatives express likeness or proportion within the field of some property. Such groups are labeled *numerative* or *epithet*, depending on whether the comparison is one of quantity or quality (Halliday and Hasan 1976: 76-84). Numeratives in the homilies usually have *ma* or *mara* ("more") at d or h (ex. 38); epithet groups use comparative-form adjectives at h or d , or positive-form adjectives with *swa* ("as"/"so") at r element (ex. 39).

38. mare...wracu 7 gedrecednes þonne aefre aer waere... (3-11)



("more distress and affliction than ever previously was...")

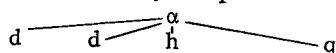
39. swa yfel...swa hit sceal geweorðan... (5-97)



("as evil as it must become...")

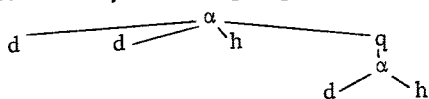
Non-comparative groups are labeled *specified* or *reduced*. The latter include the third-person pronoun *he/heo/hit* with or without modification, and the relative pronoun *ðe*. By contrast, specified groups possess a more particular referential content. For example, those with the feature *demonstrative* register a degree of real or simulated proximity, and may so be distinguished as *near* and *far* (Halliday and Hasan 1976: 57 ff.; Martin 1976: 11-12). Groups with feature *near* show *þes/þeos/þis* ("this") at d or h (exs. 1, 32). Groups with feature *far* show *se/seo/þæt* ("that") at d or h in combination with a great variety of realizations at other elements (exs. 5, 19, 30). The other specified groups have the feature *grouping*, which suggests that they make reference to some collective in which they play a part. Such groups which are also *selected* may be *qualitative*, showing superlative forms at d or h (ex. 40), or *successive* (ex. 41). Those which are *unselected* may have the features *dual* or *individual* (Martin 1976: 6, 12-15; but see Halliday and Hasan 1976: 81). The one example of *dual* in the homilies is realized by *aegþer* ("either", 20-77). Groups with the feature *individual* show *aeghwylc*, *aelc*, *gehwylc*, and *gehwā* ("each") at d or h element (ex. 42).

40. þæt maeste yfel þe mannum is towerd (5-51)



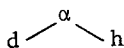
("the greatest evil which is impending for men")

41. *ðam endenyhstan dagum þissere worulde* (5-17)



("the last days of this world")

42. *aeghwylce wisan* (3-33)



("each way")

FOOTNOTES

¹Citations of text for 3, 5, and 21 are from Bethurum (1957), and for 20 from Whitelock (1976).

²Since the terms of reference for this surface description, and to a degree the structures and ranges of realization necessarily resemble those for *Sermo Lupi* alone (Cummings 1980), I have followed the same order of exposition as before.

³Most examples cited throughout are the earliest of occurrence in the corpus, except for some examples previously cited in another connection. However I have tried to avoid citing, when possible, any single-word realizations, and any atypical cases: interrupted groups, *fela*, rankshifts, group-complex segments, *se þe* relatives and doubtful realizations. The number following each citation gives homily and line.

⁴These include *aeghwylce* ("each"), *aelo* ("each"), *an* (as indefinite article), *fela* (much/many), *gewelhwylce* ("nearly every"), *hwylce* ("which/any"), *lytel* ("little"), *manig* ("many"), *nan* ("no"), *sum* ("some"), *swilo* ("such"), and comparatives.

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ASPECTS OF THE IMPERATIVE IN HOPI

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0. Introduction

This paper presents a discussion of certain imperative sentences in Hopi, a Uto-Aztecan language of northern Arizona. The data under consideration are given in Table 1; the Hopi forms are given once in the Hopi orthography (more-or-less equivalent to a phonemic transcription) and then again in an analytical transcription.

As can be seen, the affirmative imperative involves a suffix, and the verb also exhibits concord with the number of the underlying agent, even though no subject pronoun occurs. The negative imperative is expressed by a negative future clause, complete with subject pronouns and verb concord. The relationships which account for the data will now be examined.¹

1. Semological Relationships

Figure 1 shows the semotactic relationships assumed to underlie the data. In constructing this tactics, a number of simplifying assumptions have been made, none of which are immune to revision. Since these assumptions bear on the treatment of imperatives in any language, they will be discussed in greater depth where they become relevant.²

The first such assumption involves the imperative sememe vis à vis sememes of tense and aspect. Imperative constructions do not seem to allow aspects such as the habitual, durative, or future; that is, no sentences such as (1), (2), or (3) have been found:

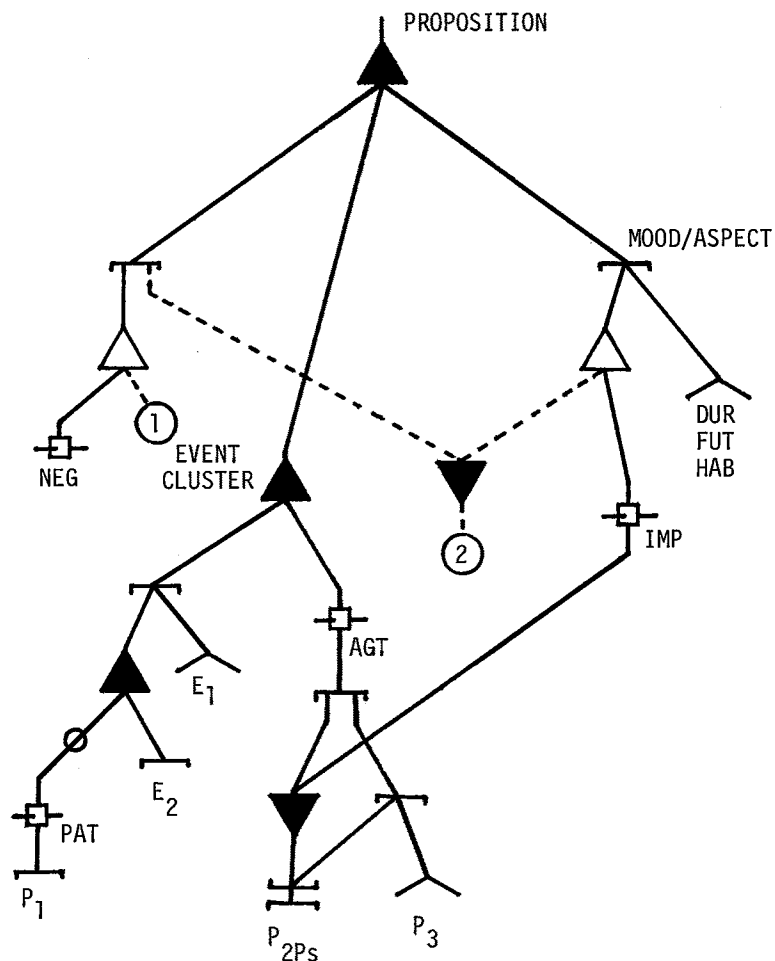
- (1) ? kiihut penta'a
 house-OBL paint-SG-DURATIVE-IMP
 'Be painting the house!' (sg.)
- (2) ? waayangwu'u
 run away-SG-HABITUAL-IMP
 'Make it your habit to run away!' (sg.)
- (3) ? nevnit nösni'i
 greens-OBL eat-SG-FUT-IMP
 'You will eat the greens!' (sg.)

Table 1: Data on the imperative in Hopi.

<u>Hopi</u>	<u>Gloss</u>
um wari 2-SG run-SG	'You ran.' (sg.)
wárik'u run-SG-IMP	'Run!' (sg.)
um wárikni 2-SG run-SG-FUT	'You will run.' (sg.)
um qa wárikni 2-SG NEG run-SG-FUT	'You won't run.' (sg.). 'Don't run!' (sg.)
um kiihut peena 2-SG house-OBL paint-SG	'You painted the house.' (sg.)
kiihut peena'a house-OBL paint-SG-IMP	'Paint the house!' (sg.)
um kiihut peenani 2-SG house-OBL paint-SG-FUT	'You will paint the house.' (sg.)
um kiihut qa peenani 2-SG house-OBL NEG paint-SG-FUT	'You won't paint the house.' (sg.) 'Don't paint the house!' (sg.)
uma kiihut peenaya 2-PL house-OBL paint-PL	'You painted the house.' (pl.)
kiihut peenaya'a house-OBL paint-PL-IMP	'Paint the house!' (pl.)
uma kiihut peenayani 2-PL house-OBL paint-PL-FUT	'You will paint the house.' (pl.)
uma kiihut qa peenayani 2-PL house-OBL NEG paint-PL-FUT	'You won't paint the house.' (pl.) 'Don't paint the house!' (pl.)
OBL = oblique case	NEG = negative
FUT = future	SG = singular
IMP = imperative	PL = plural

Such sentences should clearly not be ruled out a priori, but in the absence of attested examples it is safer to keep the imperative separate, as shown at the OR node labeled MOOD/ASPECT. If future investigations warrant, the tactics in Figure 1 can easily be modified to allow the co-occurrence of the imperative and aspect sememes.

Rather than recognizing a sememe /PROHIBITIVE/, it has been simpler to express the notion of "prohibition" as the combination



P_{2Ps} = second person agents
 P_1 = patient participants
 P_3 = non-second person agents
 E_1 = events which cannot have a patient
 E_2 = events which may have a patient

NEG = negation
DUR = durative
FUT = future
IMP = imperative
AGT = agent
PAT = patient

Figure 1: A simplified semotactics which accounts for the data on the imperative in Hopi.

of /IMPERATIVE/ with /NEGATION/. This avoids having to split the MOOD/ASPECT sememes into two classes, one of which (/FUTURE/, /HABITUAL/, and /DURATIVE/) may occur with /NEGATION/, the other of which (/IMPERATIVE/ and /PROHIBITIVE/) may not. We also avoid having an extra sememic sign to account for the realization of /PROHIBITIVE/ as the semons /NEGATION/ and /FUTURE/.³

The EVENT CLUSTER shown in the figure accounts for two types of constructions: those with only an agent and an event, and those with an agent, an event, and an optional patient.⁴ It is seen that an upward AND has been used to account for the fact that only second person agents occur in the data under consideration.

The assumption that there is a sememe /IMPERATIVE/ and that its occurrence in a proposition requires a second person agent is both the fundamental assumption in this paper, and at the same time the most suspicious. For example, there are languages in which the "imperative" may also occur with first or third person agents; such expressions are often glossed in English with modals ('He ought to come!') or with *let* ('Let's go!').⁵

It may be profitable, then, to employ a sememe /IMPOSITION/ rather than /IMPERATIVE/ for some or perhaps even all languages.⁶ The use of the sememe /IMPOSITION/ would presumably entail less context-sensitivity with regard to agents in the semotactics, but would still be realized as the "traditional imperative" in appropriate environments--notably those with second person agents. This proposal is tentative rather than definitive, however, and it is not apparent how /IMPOSITION/ would figure in a more detailed description of Hopi. For this reason the more "traditional" approach has been taken here.

The semotactics in Figure 1 also provides conditioning environments for two semolexic discrepancies: (1) zero realization with regard to second person sememes in affirmative imperative constructions, and (2) the syncretization of /IMPERATIVE/ and /FUTURE/ in negative imperative constructions. Note that if /NEGATION/ occurs, the upward AND in the conditioning pattern will not succeed, and the second person sememes will be realized at the lexotactic level.

The details of these discrepancies are provided in Figure 2. Note that even though the second person semon /2Ps/ may not occur as part of the realization of the second person plural sememe /2PsPL/, the accompanying number semon /PL/ always does; it is this element which eventually results in plural concord on the verb even when subject pronouns are absent in the lexotactics. It is to the lexotactic relationships that we now turn.⁷

2. Lexotactic Relationships

Figure 3 depicts the lexotactics which accounts for the data. The figure shows that Hopi is an SOV language, the agent typically being realized in clause-initial position (S), optionally followed by the patient (O), with the verb (V) in clause-final position. Negation, if present, immediately precedes the verb.

The unordered AND immediately below the subject DIAMOND allows

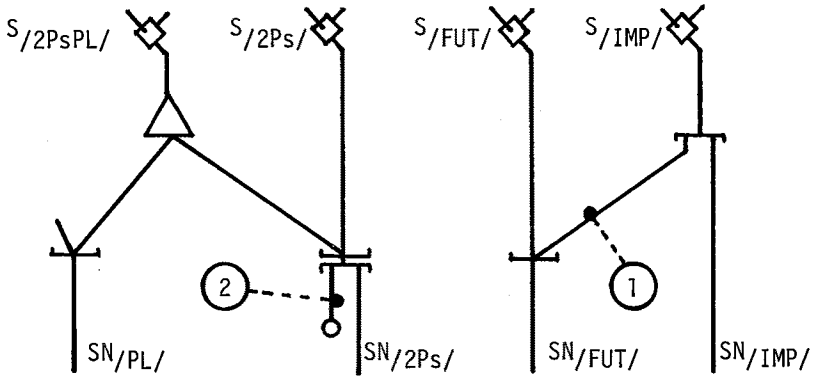
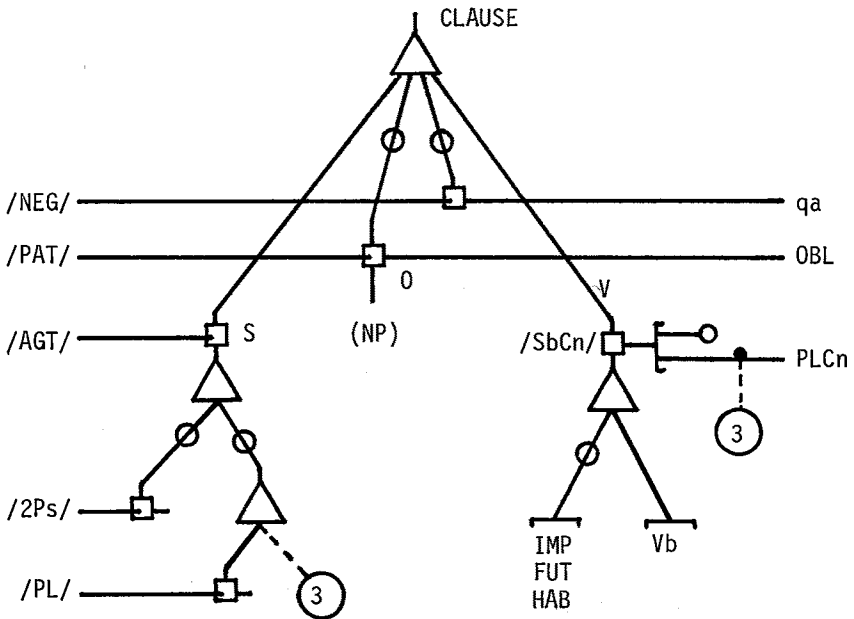


Figure 2: Details of semolexic discrepancies.

Figure 3: A simplified lexotactics of Hopi which accounts for the data on the imperative.



(NP) = noun phrase
/SbCn/ = subject concord
PLCn = plural subject concord
OBL = oblique case

Vb = verb
S = subject position
O = object position
V = verb position

various combinations of the person lexeme /2Ps/ and the number lexeme /PL/. For example, the use of optionality elements (the small circles) allows either /2Ps/ or /PL/ to occur alone. In the first case, we get the unmarked singular for both the pronoun and the verb. In the second case, /PL/ conditions plural concord on the verb via conditioning line 3 before being realized as zero in the lexonic alternation pattern a little below the level depicted in the diagram. Sentences (4) and (5) illustrate these two possibilities.

- (4) um qa wārikni
 2Ps NEG run-SG(SbCn)-FUT
 'You won't run.' (sg.)/'Don't run!' (sg.)
- (5) yuutuku'u
 run-PL(SbCn)-IMP
 'Run!' (pl.)

The same configuration of nodes allows /2Ps/ and /PL/ to occur together, which results in sentences such as (6). Finally, since both lines leading from the plural side of the AND are optional, both /2Ps/ and /PL/ may be absent, leading to sentences such as (7).

- (6) uma qa yuutukni
 2Ps-PL NEG run-PL(SbCn)-FUT
 'You won't run.' (pl.)/'Don't run!' (pl.)
- (7) wāriku'u
 run-SG(SbCn)-IMP
 'Run!' (sg.)

In concluding the discussion of the lexotactics, it is only necessary to add that the verb is associated both with a concord element /SbCn/ and with a set of mood/aspect lexemes, among which are /IMPERATIVE/ and /FUTURE/. The zero on the ordered OR of the concord element allows the treatment of singular verb concord as unmarked at both the lexo- and morphotactic levels; the same reasoning applies to the optionality element on the line leading to the mood/aspect lexemes, where it is the durative aspect which is treated as unmarked.

3. Morpho- and Phonological Phenomena

Although space limitations preclude a detailed examination of the various morphological and phonological aspects of the Hopi imperative, a few brief remarks are in order.

First, the imperative and future lexemes are both realized as morphotactic suffixes, even for verbs which have suppletive stems due to plural concord; compare the form in Table 2. The accent on the form wāriku'u is a property of the stem which is reflected in the orthography as a written accent. Its occurrence is not part

Table 2: Imperative forms for some suppletive and non-suppletive verbs.

	<u>SIMPLE</u>	<u>IMPERATIVE</u>	<u>Gloss</u>
SG	wari	wárikú'u	'run'
PL	yuutu	yuutuku'u	
SG	peena	peena'a	'paint'
PL	peenaya	peenaya'a	
SG	qatu	qátu'u	'sit'
PL	yeese	yeese'e	
SG	saavuta	saavuta'a	'chop'
PL	saavutota	saavutota'a	

of the realization of the imperative; neither is the linking *k* which occurs in suffixed forms of certain verbs.

The imperative suffix is realized phonemically as a glottal stop followed by a copy of the final vowel of the verb complex preceding it; this complex may be the verb stem alone, or the stem accompanied by various derivational and concord elements. The imperative ending may be represented morphophonically as /'V_r/ where /V_r/ is a reduplicative vowel in the phonotactics. The imperative ending can evidently be pronounced with either heavy stress or with extremely light stress.⁸ A more formal treatment of these phenomena must await the appearance of further accentual and intonational data.

NOTES

1. The data are based on Kalectaca (1978). The treatment presented here is, of course, tentative; further data would certainly require modifications. The lack of intonational data is particularly regrettable in the light of the "ambiguity" between negative future and negative imperative constructions.
2. As a purely technical note, it should be mentioned that shaded unordered AND nodes are used here to indicate nodes which are arbitrarily sequential rather than strictly simultaneous. For the reasoning behind this, see Lockwood (1972: 152, 154) and Blansitt (1979).
3. Some readers may wish to construct the two competing networks for themselves; in doing so, it is important to remember that the description employing a sememe /PROHIBITIVE/ will also require a syncretization of the sememe /NEGATION/ and part of the sememic sign which realizes /PROHIBITIVE/.
4. Most co-occurrence restrictions in the semotactics have been

ignored here so that we may more effectively focus on the behavior of the imperative. This is not meant to imply that such restrictions are a trivial matter. They are not. Major stratificational works which treat this problem are Ikegami (1969), D. Bennett (1975), Johannesson (1976) and Müller (1978). Chafe (1970) discusses the topic from a different (but not incompatible) point of view.

5. A good example of a "third person imperative" is found in Hawaiian. Note that in sentences (a) and (b) the "imperative" particle e may occur with either a second person or a third person agent:

(a) e hele mai 'oukou
 IMP go hither you (pl.)
 'Come here!' (pl.)

(b) e hele mai lākou
 IMP go hither they
 'They ought to come here!'/ 'Let them come here!'

6. This idea was suggested by Johannesson's description of English modals; for him, /IMPOSITION/ is an "illocutionary force sememe which signifies what is common to both commands and entreaties" (1976: 142). Thus (c) and (d) both involve an occurrence of /IMPOSITION/, but the use of demand in (c) indicates that the speaker assumes authority over the addressee, whereas beg in (d) indicates that the authority relation is reversed.

(c) I demand you to help me tomorrow.

(d) I beg you to help me tomorrow.

7. The description provided here is necessarily an abbreviated one; in particular, the Hopi dual forms have not been considered. M. E. Bennett (1980) discusses number in Hopi and provides a slightly more detailed lexotactics, but Kalectaca (1978) remains the most extensive and widely available source of information on Hopi. The treatment of the plural pronoun with a sememic sign rather than with a semotactic combination of /2Ps/ and /PL/ hinges on a number of matters outside the scope of this paper. A comment by Ernst Pulgram following the oral delivery of my 1980 paper prompted a more thorough investigation of this matter, and the author hereby thanks him for sharing his insight.
8. Kalectaca states that "Often the imperative ending is pronounced with stress, in addition to the normal stress of the verb in non-imperative uses. It is also common for the imperative ending to be pronounced very weakly, so that it sounds like a non-imperative verb..." (1978: 98).

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THE OLD ENGLISH NOMINAL FORM/FUNCTION CONFIGURATION

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Two competing nominal form/function systems appear to exist in Old English: the first, a distinctive system, an Old English innovation, in which grammatical case distinguishes grammatical function, with any one of the oblique cases (case alternation) indicating the function 'objective' (Collins 1980), and the second, a contrastive system, inherited from West Germanic, in which grammatical case distinguishes semantic role and verb meaning determines sentence nominal roles, with verb governance of the object noun case (cf. Baron 1974, Fries 1940, Marchand 1951, Visser 1970). As the existence of two competing form/function systems within a language is theoretically possible and because the sentences governed by the distinctive system are exceptions to contrastive system governance, the new hypothesis was considered to be viable. At first glance all data seem to support an hypothesis of competing form/function systems.

The distinctive system governs those sentences in which the sentence propositions (meanings) and the verbs are identical, while the object noun case inflections differ. Analysis has shown that a semantic-role/case-form relationship does not exist in these sentences but that a grammatical-function/case-form relationship does (Collins 1980), e.g., as in

- (1) Seo wyrd preap ða unscildigan [accusative] and nauht ne
preap ðam scildigum [dative]. Ælfred Boethius (Fox) 8,13
[Fate threatens the innocent and nothing threatens the
guilty.]

The meaning of this sentence shows that the two object noun phrases, ða unscildigan and ðam scildigum, have the same semantic role (patient) which is indicated by the verb meaning, and, therefore, they should carry the same inflection. As they do not, semantic role cannot be what is indicated. In each instance the oblique case signals the grammatical function 'objective', thereby distinguishing the object nominal from the subject nominal.

The contrastive system governs those sentences in which semantic role is readily identifiable by sentence meaning as well as by case form, e.g., (2) through (7) below. In these sentences the proposition meaning is such that dative can be interpreted to indicate 'recipient', the genitive 'causative', and the accusative 'any one of the various accusative roles'. These latter roles are never defined in the literature because the relationships are considered "too multifarious and too heterogeneous to be comprehended in one single term" (Visser 1970, 410). Role identification is determined by verb meaning. It is this seemingly real association between case and semantic role that convinced other researchers of

the reality of the contrastive system in Old English.

- (2) *pæt he...gebearh cnihtum [dative]... Daniel 473*
[that he protected the young men...]
- (3) *Heo nolde were [dative] æthrinan... ASHom (Assman) 135, 654*
[She would not touch the man...]
- (4) *hrefn weorces [genitive] gefeah... Elene 110*
[the raven rejoiced in the work...]
- (5) *ða ongan se bishop lustfullian ðæs iungan synttro [genitive]... Ælfred Bede (Smith) 637, 46*
[then the bishop began to take pleasure in the young man...]
- (6) *7 pær abracan an geweorc [accusative]... Anglo Saxon
Chronicles 892*
[and there [they] captured one fortress...]
- (7) *þonne he beot [accusative] spriceð... Wanderer 70*
[when he utters a vow...]

An analysis of the role/case/verb-meaning relationships reveals that for object nouns, if the verb meaning specifies the recipient role (2,3), the case is dative; if it specifies the causative role (4,5), the case is genitive; and if it specifies either the result role (7) or the patient role (6), the case is accusative; and for subject nouns, if the verb meaning specifies the agent role (2,3, 6,7) or the experiencer role (4,5), the case is nominative.

At this stage in the investigation it seemed possible that the hypothesis under investigation would be accepted. However, further analysis revealed the presence of conditions, not previously recognized, that negate the hypothesis. The first condition is that grammatical case is an integral part of both systems but indicates a different function in each: in the distinctive system it indicates grammatical function, while in the contrastive system it indicates semantic role. Such a situation would cause perception problems in that the hearer would not know what he was to understand. This fact, too, acts against the hypothesis.

The second condition that argues against the reality of two competing form/function systems is the occurrence of innumerable sentences in which the case form is indeterminate: there is no distinction of case by form. This situation involves the weak declensions and all the feminine noun declensions. If semantic role designation is dependent upon a specific identifiable case form, the lack of distinction would prevent such a designation being made, as the sentences below show.

- (8) *hu þa dædfruman [indeterminate] dugeþa [indeterminate]
stryndon welan [indeterminate] and wiste [indeterminate].*
Genesis A 967
[how the deed-doers acquired companions, goods and food.]
- (9) *He gymþ grædlice his teolunge [indeterminate] his gafoles
[genitive] his gebytlu [accusative]. Ælfric Homilies
(Thorpe) i, 66, 10*
[He greedily keeps his gain, his rents, his buildings.]
- (10) *he onfon sceal blisse minre [indeterminate] 7 bletsunge
[indeterminate] lufan [indeterminate] 7 lisse [indeterminate].*
Genesis A 2333
[he shall receive my joy and blessing, love and favor.]

- (11) se æglæca ehtende was...ðugupe [indeterminate]. Beowulf 159
[the monster was persecuting the old retainers.]
- (12) Ic wolde ðe...mundgian ðære manigfealdan lare [indeterminate]... Ælfred Boethius (Fox) 240, 11
[I desired you to remember the manifold doctrine...]

In (8) the case form of each of the four nouns of the proposition is indeterminate, including that of the subject noun, in (9) there is a mixture of indeterminacy and case alternation of the object noun case forms, in (10) and (11) there is indeterminacy of object noun case forms only, and in (12) the case forms of the determiner, the adjective and the noun in the object NP are all indeterminate. This latter situation, not at all uncommon in OE, refutes the statement found in the literature that if the case form of the noun itself is indeterminate, then either the modifying adjective or the determiner case form will clearly specify the case (Fries, 1940, 200).

The third condition that denies the investigative hypothesis is the presence of multiple sentences in which grammatical case seems to indicate semantic role when each sentence is looked at individually; however, when these sentences are grouped according to verb identity, examination reveals that semantic role is not indicated at all, but grammatical function is. These sentences exhibit case alternation, a condition that has not previously been recognized, other investigators assuming that form indicates function, and that if the form differs, the function differs (cf. Baron 1974, Fries 1940, Klaeber 1904, 1950, Marchand 1951, Visser 1970). Case alternation is easily identifiable when these sentences are grouped as the following grouping demonstrates.

- (13a) ða ic furpam weold folce [dative] Deniga. Beowulf 465
[when I first ruled the Danish nation.]
- (13b) penden ic wealde widan rices [genitive]... Beowulf 1859
[while I rule the wide kingdom...]
- (13c) Swa ic Hring-Dena [genitive] hund missera weold...
Beowulf 1869
[So I ruled the Ring-Danes 50 years...]
- (13d) Weder-Geatum [dative] weold. Beowulf 2379
[[He] ruled the Weather-Geats.]
- (13e) Habbað hi 7 wealdan Hornemerres hunred [accusative] on hyre
agenre andwealde. Codex Diplomaticus (Kemble) iv, 200, 7
[They have and rule Hornemere hundred in their own power.]
- (13f) ðe ealne middangeard [accusative] geweold. Ælfred Homilies
(Thorpe) i, 80, 7
[who ruled all the world.]

In the above sentences the verb is identical, the semantic role is that of patient, and the object nouns are essentially the same in meaning: a political unit. However, since the object noun case alternates, semantic role cannot be what is indicated. These sentences are governed by the distinctive system. The semantic role implied in each sentence is due to the meaning of the verb wealdan. Verb determination of semantic role affects all sentence nominals, not just the object nominal; there is no semantic-role/nominal-type association as (14a and b) demonstrate. Experiencer verbs

verbs, such as warian and agan, require that one nominal in the sentence have the experiencer role, but they do not specify which nominal. The experiencer role is carried by the object in (14a) and by the subject in (14b).

- (14a) warað hine [accusative] wræclast. Wanderer 32
[the exile track [causative] preoccupies him [experiencer.]]
(14b) se þe [nominative] ah lifes wyn. Seafarer 27
[he who [experiencer] possesses the joy of life [causative].]

In other sentences, only textual analysis demonstrates that case does not indicate semantic role but grammatical function. In these sentences the case form and the lexical meaning of the nominal combine to suggest an incorrect function designation which may result in an incorrect interpretation of the sentence. Such is the situation in the following sentences in which the case suggests a specific role that is reinforced by the nominal lexical meaning.

- (15a) penden hie ðam wæpnum [dative] wealdan moston. Beowulf 2038
[as long as they might control the weapons.]
(15b) swa he ne mihte...wæpna [genitive] gewealdan. Beowulf 1508
[as he could not control the weapons.]
(16a) penden wordum [dative] weold wine scyldinga... Beowulf 30
[while the Lord of the Scyldings controlled his words.]
(16b) Gif he his wordcwida [genitive] wealdan meahte...
Guplac 1159
[If he could control his speech...]

Textual analysis demonstrates that wæpnum and wordum are not instruments and that wæpna and wordcwida are not causatives. The texts clearly show that the oblique cases signal grammatical function. The sentences are correctly interpreted as translated above and should not be translated according to semantic role. Translators of Old English texts often use an instrumental in the above because the dative indicates both adverbial and objective function (cf. Garnett, 1900, 2, 30).

For the purposes of this paper, it was only necessary to discuss the grammatical functions 'subject' and 'direct object' ('object' in the text), thereby suggesting that the distinctive system is a two-case system. Actually, the distinctive system is a three case system, consisting of the subject, the indirect object, and the direct object functions, with the subject distinguished from the two objects and the two objects distinguished from each other (forth-coming paper).

This study demonstrates that all data support the following conclusions with no exceptions.

- (1) The hypothesis of two competing form/function systems can be rejected.
- (2) The distinctive system is the only form/function system in Old English, with form indicating grammatical function.
 - (a) Grammatical function is indicated either by word order alone (the subject is sentence initial), by grammatical case, or by both (redundancy).

- (b) In a two-nominal proposition (subject and direct object) only one nominal has to be marked, either as subject or as object.
- (c) The marking of one nominal as either subject or object simultaneously indicates that the unmarked nominal is either non-subject or non-object, as the case may be.
- (3) The contrastive form/function system exists in form only, not functionally, throughout the entire Old English period.
- (4) The redundancy within the distinctive system, caused by the competing forms (word order and inflection) indicating the function, coupled with the lack of grammatical case distinction by form of some noun declensions, triggered the subsequent loss of all inflections except the genitive (retained in its noun-modifying function only) in Middle English.
- (5) The changeover to the distinctive system occurred in Proto Old English. The multiple occurrences in Beowulf, Genesis A, and other early texts (ca. 750-800 A.D.) of sentences that show distinctive system governance instead of contrastive system governance strongly support this conclusion. This conclusion differs from the conclusion of other researchers. They consider Middle English as the period when word order and grammatical function supplant the contrastive system because it is the period when the inflections disappear, (cf. Baron 1974, Fries 1940, Malone 1937, Marchand 1951, Visser 1970).
- (6) OSV, VOS and OVS sentence patterns occur in Old English because grammatical case can distinguish subject from object.
- (7) In SVO, VSO and SOV sentence patterns, case is redundant because word order distinguishes subject from object.

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ON THE DEVELOPMENT OF THE CONSTRUCTION KOMMEN +
PERF. PART. IN GERMAN
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1. Introduction. For more than a century grammarians have tried to find a logical explanation for the development of the somewhat "out of place" construction-type, kommen + perf. part. (in the following called KPP) of a verb of motion or a sound verb in German. Paul characterizes the origin of the KPP-construction as "rätselhaft" (Paul 1957, 80), Behaghel "unklar" (Behaghel 1924, 411) and Priebisch and Collinson writes that "its origin is obscure" (Priebisch and Collinson 1948, 337). The reason why grammarians have found this specific construction-type in German so intriguing, is to be sought in the development of the past participle. Past participles were originally, as is well known, only used as adjectives, i.e., as predicatives or as attributes. The past participle of a transitive verb has, as an attribute, mainly passive force, as can still be seen in NHG. (for instance: das gelobte Land, ein gebrochenes Herz), the past participle of a perfective intransitive Verb had and still has mainly an active meaning, when it is used as an attribute (for instance: ein gefallener Baum, ein entlaufener Sträfling). In the KPP-construction (like for instance: kam gelaufen, kam gefahren, kam gerannt, kam gerauscht) we find only the past participle of durative intransitives, and as Behaghel says "die Entstehung der Fügung ist unklar, da es ja Partizipia Prät. von imperfektiven Verben im allgemeinen nicht gibt" (Behaghel 1924, 411). Lockwood states that "Imperfective verbs, on the other hand, did not acquire a past participle until the development of the periphrastic past tenses and the periphrastic passive. To this day, they can only be used within these constructions: ich habe gelebt, ich bin gelaufen, es wird geschlafen" (Lockwood 1968, 162). The past participle of an active, durative, intransitive verb of sound or motion (like for instance: rauschen, sausen, gehen, reiten etc.) was never used as an adjective, and that rule applies also to modern German. Sentences like *Der gegangene Mann. *Der Mann ist gegangener

als der da. are unacceptable. Grammarians like Paul, Behaghel, Grimm and others did not suggest any solution to the problem of how German has developed a past participle of this kind in the above mentioned construction. Most other Germanic languages use either the present participle or an infinitive in this type of construction (for instance: English: came running, Dutch: kwam vliegen). In this paper I will also deal with the constructions kommen + present participle (in the following called KPPr) and kommen + infinitive (in the following called KI) in cases where these are equivalent in meaning to the KPP-construction. There has been no major discussion of this construction-type until some 30 years ago. At that time it was mostly Non-German scholars who showed interest in the problem. The most important contributions were made by I. Dal, Hirao and Wandruszka. The discussion and investigation into the problem area led to the establishing of the current leading hypothesis: that the German KPP originally developed from a KI-construction within the MHG. period. I will investigate the arguments for this point-of-view extensively below, but first I will present a list of what construction-types are found in the different Germanic languages at different stages, going back to the first written sources of the language in question. Thereafter I will explain my method of working, and how I think that it is possible to solve the problem in this case through working with an extensive corpus.

2. The KI-, KPPr- and KPP-constructions in the different Germanic languages. A list of the formally variant types occurring in the different Germanic languages includes:

Northgermanic

ON.: KPPr: kømr fljúgandi

Norw.: KPPr: kom flygende

Eastgermanic

Goth.: The construction does not occur.

Westgermanic

AS.

OE.: KPPr: cōm farende, rīdende

KI: cōm faran, rīdan, flēogan, gangan, gān

ME.: KPPr: cōm fārinde, rīdinde
 KI: cōm fāren, rīden
 Chaucer: (The 14th century) KPPr: cōm rīding
 KI: cōm fāren
 Engl.: KPPr: came riding

Dutch

MD.: KI: quam varen, gaen, fliegen
 KPP: quam ghegaen, gheflorgen
 ND.: KI: kwam vliegen, rijden, varen, lopen, gaan
 KPP: kwam gevlogen, gereden

Low German

OS.: We find in Heliand:
 KPPr: Thuo quam im thar thie hēlago tuo gangandi
godes suno (5961)
 KI/KPP without gi-prefix:
thō quam thar ōc ēn uuīf gangan (503)
Siu quam thar ōc gangan tō an thea selbun
tīd (516)
gangan quāmun threa te thero thiodu, thegnos
snelle, an langan uueg (542)
Sō quāmun gangan is hagastoldos te hūs
(2547)
Thō gefragh ik that thar thero idisio quam
ōdar gangan Maria mōdkarag (4065)
'so gi than gangan kumad' (4533)
Thar quam im ēn fēkni uuīf gangan tegegnes
(4954)
Thō quāmun thar at laztan ford an thena
huarf uuero uuārlōse man tuēne gangan
(5070)
ueros gnornodun, thia fan Galilea mid im
gangan quāmun (5516)
al sō drōr kumid uuallan fan uundun (4751)
antat imu uuallan quāmun (5004)
thuo thar suōgan quam engil thes aluualdon
ōbana fan radure, faran an federhamon
(5796)
 KI/KPP with gi-prefix:
te huī gi thus an ganga kumad, gifaran an
fōdiu (555)
gifaran quāmun obar langan uueg (3752)
 MLG.: KI: quam springen, gān
 KPP: quam gevaren, gegān, gevlogen
 NLG.: KI: kam springen
 KPP: kam gefaren, geflogen

High German

- OHG.: KPPr: quāmun feriente
 MHG.: KPPr: kam louffend
 KI: kam gân, gangen, quamen zuwandern
 KPP: kam gerant, gegân, gegangen
 Early NHG.: KPPr: Kom zu vns erauff eilend
 (Luther 1545 (1972), 1, 422)
 KI: kam sausen
 KPP: kam gegangen
 NHG.: KPPr: kam reitend
 KPP: kam gesprungen, gekrochen, gehüpft,
 geritten

A formal representation of the above data is shown in Figure 1.

	ON	Norw.	Goth.	OE	ME	Chaucer	Engl.
KI				X	X	X	
KPP							
KPPr	X	X		X	X	X	X
KI/KPP							

	MD	ND	OS	MLG	NLG	OHG	MHG	early NHG	NHG
KI	X	X		X	X		X	X	
KPP	X	X		X	X		X	X	X
KPPr			X			X	X	X	X
KI/KPP	X		X	X			X		

Figure 1

The entry KI/KPP indicates that we have to do with formal ambiguity.

As expected this construction-type does not occur in Gothic, a language that has not developed the periphrastic verbal forms. I would not find it surprising if the KPPr-construction was attested in Dutch and in Low German. The construction would not occur frequently, and my material is too small in order for me to say anything definite about this. The KPPr-construction is, however, not mentioned in grammatical descriptions of either Dutch or Low German. From the point-of-view of dialectology it is interesting to note the difference in frequency of the various constructions. In the northern areas KI prevails (in Anglosaxon the KPP-construction is not attested), in the southern areas (i.e. in High German) the KPP-construction occurs as the most frequent. In MHG. KPP is far more frequent than KI, and in NHG. literary sources the KI-construction is

no longer attested.

3. Linguistic method - The Data. To solve this specific linguistic problem, I have found it appropriate to gather and examine an extensive body of data, mainly from High German sources. I have rechecked OHG. texts, such as Muspilli, Hildebrandslied, Otfrid's Evangelienbuch and Tatian, and have come to the same conclusions as are stated in the grammatical literature dealing with this problem, namely that only the KPPr-construction and not the KI and KPP is to be found in OHG. Since the generally accepted hypothesis, as presented by I. Dal and Hirao, states that the development from an infinitive to a past participle takes place within the MHG. period, my main body of data is gathered from MHG. It consists of 769 occurrences of the KPP-construction (formal ambiguity between the past participle and the infinitive with ge-prefix of verbs from the 5., 6. and 7. strong verbclasses is found in 261 of these sentences), 8 occurrences of the KI-construction and 17 KPPr-constructions taken from 36 MHG. works from the early 12th century to the 15th century. To investigate any changes in the use of this construction-type I have examined early NHG. in the 1545 edition of the Luther Bible, the last edition to appear during his lifetime, and Spee's Trutznachtigall. In order to cover the development in High German I have gathered 1000 sentences containing the KPP-construction and 56 with the KPPr-construction from 299 literary works of modern German. To test possible influence from other Germanic languages, I have checked Gothic, Old Saxon, Old English and Old Norse literature, and for comparison I have also investigated the development within the other Germanic languages by examining modern English, Norwegian and Dutch. To solve the linguistic problem raised in this paper, however, the answer must be found mainly in the MHG. material, and a possible development by analogy must be examined vis à vis the other old Germanic languages.

4. The current prevailing hypothesis. I. Dal has in two articles from 1952 and 1954 outlined her hypothesis that an original KI- developed into a KPP-construction, as the infinitive with the perfective prefix ge- was mistaken for a past participle. She puts forth three main arguments to support her point-of-view. The first deals with the "Aktionsart" of the construction, the second with

development through analogy with construction types found in other Germanic languages, and the third argument is that the development of the verb gangan supposedly played an important role in creating the possibility for the misinterpretation of the infinitive.

4.1. "Aktionsartsverhältnisse" of the KPP-construction. I. Dal maintains that since the construction is perfective, the durative verbs combined with kommen needed a perfective prefix ge- to make it fit into the construction. An infinitive with a ge-prefix and a past participle of a verb belonging to the 5., 6. or 7. verb classes (for instance: gevarn, gefallen, gegangen (gegân), geloufen, gestôzen, getreten) would not be formally distinguished, and this formal ambiguity could lead to a false interpretation of the infinite form. Counter-arguments to that are:

1. The ge-prefix has as early as OHG. lost most of its original perfective meaning. In OHG. perfective infinitives with gi-prefix were used after verbs of motion to indicate the purpose of the movement ("Finalität") (for instance: imo ilt er gesagên that (Otfrid)). The same is the case in OS. (for instance: giwêt im ... an enna berg uppan ... sundar gesittien (Heliand 1250)). The ge-prefix is used in MHG. after certain modals (for instance: mûgen gesehen), but there is no evidence for the use of the ge-prefix after kommen.
2. The construction itself does not express perfectiveness or durativeness. It can be used, however, both in perfective and in durative settings. Durative are for instance the MHG.:

Ein briefelein han ich vernomen:
 Mich daucht, es wâr von himel komen,
 So wunneleich kam es geflogen
 Da her in einem regenbogen (Ring 89, 2275f.)

Sîn wille stuont ûf kampfes bîl.
 er kam geflogen als ein pffl.
 der uz der nûze snellet (Trojanischer Krieg
 150, 12567f.)

Do wart vroun Prünhilde gesaget mit maeren
 daz unkunde recken dâ komen waeren
 in hêrlîcher waete gevlozzen ûf der fluot
 (Nibelungenlied 77, 409,1f.)

nû kam her Iwein balde
 dort ûz jenem walde
 ze velde gewalopieret,
 in engel wîs gezieret (Iwein 208, 2551f.)

unt der helm gezimieret.
 si kômen geheistieret
 durch die passâschen ûf den plân
 (Parzival 280, 592,27f.)

and the NHG.:

Die Schnecke kommt allmählich immer näher
gekrochen.

Der Wagen kommt langsam auf mich zugerollt.
 (see Wandruszka 1971, 53).

Directional- or place adverbials can have the
 effect of making an expression perfective:
 for instance her in the MHG.:

und kam her gerûeret mit dem swerte
 (Tristan 224, 16052f.)

dar in:

sô swinde er dar gerûeret kam (Tristan 128,
 8980)

and ze mir in:

Kom ze mir gedrungen (Gesamtabenteuer I 289,
 299)

In NHG. ans Ufer makes the following
 sentence perfective:

Er kommt ans Ufer geschwommen (see Erben
 1972, 306)

The KPP-construction is ambiguous, and can be
 used in both durative and perfective settings,
 thus there is no real motivation for a ge-
 prefix added to an infinitive.

4.2. The analogy-argument. I. Dal's second argument is that the KI-construction, that occurs next to the KPPr-construction in Anglosaxon, has spread southwards affecting OS. and later also HG. Central in this discussion are the two occurrences of gifaran in OS. I. Dal states that "Falls gifaran hier als prädikatives Part. Prät. aufzufassen wäre, würde man ausserdem Flexionsendungen erwarten in Kongruenz mit dem Subjekt, das an beiden belegten Stellen im Plur. steht. Das Part. Prät. von faran wird überall, wo es im Heliand vorkommt, wie ein Adjektiv aufgefasst und flektiert: 633 erlos warun ferran gifarana; 1228 warun thar gefarana" (I. Dal 1954, 494).

A counter-argument to that is:

1. This alone is not enough to prove that gifaran in Heliand 555 and 3752 is an infinitive. I. Dal would have to take the total system of predicative past participles in the Heliand into account, before making a classification, not only the two gifarana-occurrences in 633 and 1228. In Lussky's dissertation "Die mit dem Partizip des Präteritums umschriebenen Tempora im Altsächsischen" he points out the fact that there are two possible uses of the past participle in OS., the adjectival use and the verbal use (see Lussky 1921, 23 and 51f.). Used verbally the past participle is "unflektiert". He gives two examples of that: thea tidi sind nu genahid (Heliand 462o) and that uuarun thea uuison man uuestan gihuorban 'dass sich die weisen Männer vom Westen [nach Osten] gewendet hatten' (Heliand 717) (see Lussky 1921, 25). What we find in the Heliand is most likely 1 KPPr, 12 KI and 2 KPP. The reason for this classification is that past participles without gi- are rare, and those which occur are of the perfective type. If an infinitive with a gi- prefix should be the one to be expected in this construction-type, it is odd that we find only two instances of that as opposed to 12 instances of infinitives without the gi- prefix. I will thus classify the two gifaran-forms as past participles with verbal function.

4.3. The development of gangan. I. Dal's third argument for the infinitive-hypothesis is that the verb gangan occurs very often in this type of

construction. This verb with a ge-prefix should have been mistaken for a past participle as the infinitive gangan/gangen changed to gân (see I. Dal 1952, 87f. and 1954, 495).

A counter-argument to this is:

1. A thorough examination of my material does not show such a chronological sequence in the development. In the Nibelungenlied, which according to I. Dal shows a more traditional "Sprachgebrauch" (see I. Dal 1952, 87), we find only the gegan-form and not the gegangen-form. In the various MHG. works we find several different forms like for instance gegân, gân, (ge)gân, gegange and gegangen. There is no evidence to support I. Dal's argument for such a two stage linguistic change:

	Inf. w/ <u>ge</u> -prefix	Past Participle
Stage 1:	<u>(ge)gangan</u>	<u>gegangen</u>
Stage 2:	<u>(ge)gân</u>	<u>gegangen</u>

My material shows a variety of different forms both as infinitive and as past participle.

4.4. Hirao's argument for an infinitive-hypothesis. Analogy with the giwîtan-construction in OS. Hirao regards the High German construction as an import from the northern areas, and interprets the 2 instances of gifaran in the Heliand as infinitives in analogy with the OS. giwîtan-construction (see Hirao 1965, 218). Giwîtan 'sich auf den Weg machen, gehen' is a verb of movement, and it stands in construction with an infinitive (for instance: giwêt im faren/gangan/sidon). The giwîtan-construction is, however, different from the kommen-construction both with regard to semantic features (the giwîtan-construction is used to describe the purpose of the movement ("Finalität"), and giwîtan and the infinitives it stands in construction with are synonymous) and with regard to syntactic features (giwîtan is mostly used as a reflexiv verb) (see the grammatical description of the giwîtan-construction in Holthausen's Altsächsische Elementarbuch 1921, 181 and Sehrt's Heliand-Wörterbuch 1966, 710).

5. My hypothesis on the development of the kommen-construction in High German. My hypothesis is very simple, namely that the past participle has been

used as the most frequent infinite form in the kommen-construction ever since early MHG. There is no need to seek intricate explanations for why the form found in MHG. which formally looks like a past participle, should be an infinitive. As we have seen above, none of the so-called proofs for an infinitive-hypothesis seem to hold up when closer examined. I see the following as support for my hypothesis:

5.1. The constituent type of the construction.

I. Dal has classified the infinite part of the construction as a predicative, and states that therefore adjectival flexional endings would be expected if the infinite form were a past participle. But both a permutation-test and a coordination-test will show that the infinite part of this construction differs considerably from a predicative. As to position in the sentence the kommen-construction forms the sentence-frame ("Satzrahmen"), and the predicative is part of the "Satzfeld". The infinite part of the kommen-construction cannot be coordinated with a predicative, a sentence as *Er kam müde und gelaufen nach Hause is not acceptable. I see the kommen-construction as a verbal construction, parallel to the periphrastic verbal forms, and after the development of the periphrastic verbal forms (appr. 350 - 800), the verbal use of the past participle of the durative intransitives was no longer blocked. Even in the oldest written sources of OHG., periphrastic verbal constructions are fully developed (for instance with the verbs habēn, eigan and wēsan, infangan eigut 'acceptistis' (Exhort.), fram ist gigan 'processit' (Tatian) (see Braune 1967, §301, 2, Anm.3)). The kommen-construction is a secondary development, it does not occur in any language that has not already developed the periphrastic verbal forms. In most languages we find more than one variant of the kommen-construction. They differ, however, mainly as to frequency. It seems that the KPP-type was preferred by High German. In 36 MHG. works I have found 8 unambiguous KI-, 17 KPPr and as many as 769 KPP-constructions.

5.2. PP in the KPP-construction. Another important argument for my hypothesis is that even the earliest sources of MHG. show that the past participle was widely used, not only the ambiguous forms from the 5., 6. and 7. strong verb classes, but also unambiguously participial forms. In Alexanderlied we find gedrungen, in Kaiserchronik geflozen, in König

Rother gestrichen, gevlogen and gevlozen, in Herzog Ernst geriten and geflogen, in Graf Rudolf geriten and gevlogen and also the weak verb gerant, in Eilhart von Oberg the verbs gedrabet, gejaget and gerant with a weak flexion and the non-ambiguous strong participial forms geriten, gerunnen, geslichen and geflogen (see Hirao's material and reference to MHG. works, Hirao 1965, 207f.). 40 non-ambiguous participial forms are represented in my data. They are listed in Figure 2, also as to frequency of occurrence.

Weak verbs

eilen	1	schiffen	3
galoppieren	1	schuften	1
heistieren	1	segeln	1
hurten	6	snellen	2
hürten	6	snurren	7
jagen	5	sprengen	10
kehren	1	stapfen	3
leisieren	2	traben	2
recken	7	zogen	15
rennen	97		
riuschen	16	total	202
ruoren, rüeren	16		
sausen	6	22 different verbs	

Verbs from the 4 first strong verb classes

diezen	1	schleichen	24
dringen	16	swingen	5
fliegen	32	sliefen	1
fliessen	10	steigen	1
giessen	1	steiben/stiuben	1
kriechen	2	streichen	6
reiten	186	treiben	8
rinnen	1	weichen	1
schliessen	3	ziehen	4
		total	303

18 different verbs

Figure 2

The verbs for which a past participle and an infinitive with a *ge*-prefix coincide formally are the following:

Verbs from the 5., 6. and 7. verb classes

fahren	38
fallen	3
gehen	146
laufen	58
stossen	3
treten	<u>13</u>
total	<u>261</u>

6 different verbs

It is hard to justify an infinitive-hypothesis that claims that ambiguous infinitival forms were misinterpreted as participles in the MHG. period, since we find 40 non-ambiguous participial forms occurring within the same period. Gehen and laufen are frequently used in the kommen-construction, but even more frequent are the non-ambiguous reiten and rennen. Fliegen and schleichen are also frequent verbs. In my data the ambiguous verb forms occur 261 times whereas the non-ambiguous forms as many as 512 times.

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HISTORICAL LINGUISTICS AND SIGN LANGUAGE

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1. The Basic Assumption

The purpose of this paper is twofold; (1) to demonstrate that sign languages, like oral languages, also undergo changes and that since they change (in all respects), old (i.e., proto-) forms can be reconstructed to a great extent; and (2) to demonstrate that techniques for reconstruction employed in traditional historical linguistics may be applicable to sign language.

In order to carry out these objectives, it is necessary to assume that, in the absence of a proper segmentation for analysis of any sign language in existence, a morph is more often than not made up of either a single segment or a part of such a segment of a free form. Thus, what comes out at the end point of an attempted reconstruction is not the proto-segment (i.e., phoneme in the sense of oral language, e.g., the comparison of English *father* and French *père* or Spanish *padre* would yield the reconstructed phoneme in the Proto-Indo-European which has no meaning and hence is not a morph) but rather the proto-form of the morph concerned.

The reason for setting up this assumption is because I have in Peng (1978a) advocated a theoretical construct which claims that there are three principal characteristics in sign languages that are totally absent in any oral language; namely, (1) simultaneity (as opposed to linearity in oral language), (2) reversibility (in terms of both form and meaning), and (3) directionality (which may include reversibility in form but is distinct from it because of meaning).

2. Technical Problems

Before I proceed to demonstrate the applicability of historical linguistics *vis-à-vis* sign languages, it is imperative that I point out certain technical problems that pose several difficulties for my presentation.

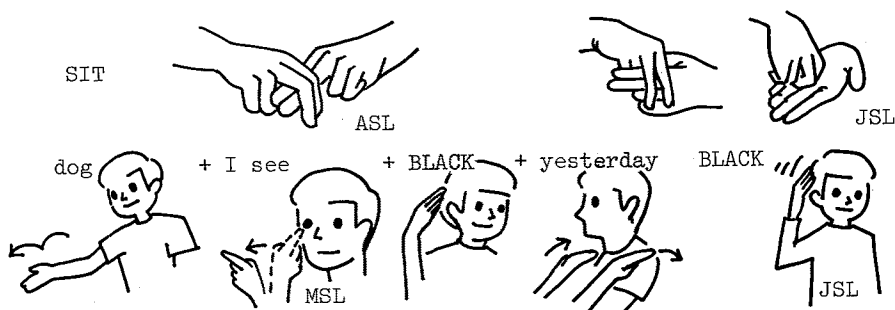
First and foremost, I should mention the dire scarcity of written records in any sign language, which is closely related to the lack of even a gross notational system for recording purposes¹, on the one hand, and to the poor understanding of the existence of any sign language by the general public, on the other. The unavailability of documentary materials is not as serious a handicap as I would like the readers to believe, simply because anybody is apt to point to me a counter argument, one being that there are still more than two thousand oral languages in the world, which have not been reduced to writings, and that when Bloomfield and Sapir applied the techniques of historical linguistics that had been tested in the Indo-European languages to Amerindian languages, many of them had left no trace of written records for the two investigators even to cope with; nonetheless, both Bloomfield and Sapir, together with their colleagues and students thereafter, managed to carry out quite successfully their comparative works on Amerindian languages. Thus, the fundamental difficulty I wish to get across, which I am encountering, is precisely this kind of accumulated knowledge about sign languages that is missing, which could have been preserved had there been an adequate writing system invented for recording any one sign language. As a remedy, I have to rely on my knowledge of historical linguistics developed essentially for oral languages in my account of the changes in sign languages, even though I know that there is a drastic difference in modality (hence the characteristics mentioned above) between sign language and oral language, and to adopt, since I am left with no other choice, drawings in the absence of a proper notational system for illustrative purposes.

Second, I should now point out the difficulty of ascertaining continuity due to frequent interruptions in the spreading (or perhaps development) of a given sign language. As I have said in Peng (1978a), the deaf do not live in a community within the global society, like the Chinatown of San Francisco or New York; rather, they scatter among the hearing population, often isolated from, only occasionally in contact with, other deaf people. This being the case, there is reason to believe that a sign language may have been interrupted many times in its development over time, before reaching its present status, without our awareness². A good example is the sole deaf person by the name of Kangobai in the Rennell Island of the South Pacific reported by Kuschel (1973). Unless in the near future other deaf children are born in order to join forces with him, the sign

language he has painstakingly developed (or shall I say invented) will be forgotten; future deaf people born after his death will have to re-invent a "new" sign language for their own consumption.

Lest my description of the difficulty above is insufficient, I must add American Sign Language (ASL) as another case in point. For a number of years, it has been thought that ASL is an offshoot of French Sign Language (FSL) implanted by Mr. Gallaudet in 1816 when he returned to America from Paris with Laurent Clerc; together they adapted French signs to the American context (Frishberg 1975; Stokoe 1960). This belief may be taken to mean that in spite of the fact that there had been deaf people in America before 1816, who undoubtedly had employed some kind of sign language among themselves, ASL was "re-invented" (or officially began) in that year, thereby imposing an interruption on the continuity of its native form (except that it is now believed to be a continuity of the French stock). This situation would probably be quite unthinkable in a community for hearing people with respect to their oral language. Woodward has lately challenged this view (1976:81), saying that there is evidence that native elements are involved. Be that as it may, it is true that the fact that such an interruption can take place to disrupt overwhelmingly, if not entirely, the development (or spreading) of a given sign language is because the users of the sign language do not always live in a community (more often than not, they do not even form a nuclear family where the sign language can be used constantly). One direct consequence of this problem is the grave difficulty of separating what are domestic signs and what are borrowings. One of the sign languages used here is similar to ASL in this respect.

Third, sign languages are far more iconic (or context-dependent) than oral languages, so much so that if one takes the trouble of comparing any two sign languages which we know are not genetically related, the probability of having chance resemblance is far greater than in the case of oral languages. Two instances are provided below, between Japanese Sign Language (JSL) and ASL for *sit* and JSL and Mayan Sign Language (MSL) for *black*, to exemplify my point. That is, if each pair of culturally unrelated, linguistically quite dissimilar and geographically remote sign languages can have a high probability of chance resemblances, the probability is likely to be much greater between a pair of sign languages whose cultural backgrounds are similar and geographic locations very near.

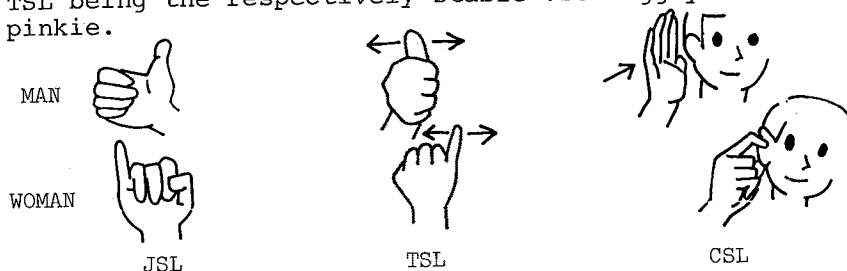


With those problems in mind, I shall now proceed to compare three sign languages; namely, JSL, Taiwanese Sign Language (TSL) and Chinese Sign Language (CSL). Since this is not the place for the discussion of establishing the genetic relationships among them (because we already know that JSL and TSL are related, but not TSL and CSL or JSL and CSL), no provision of the Swadesh's 100-word or 200-word list is made. Only a few kinship signs that are believed to be cognates will be employed for comparison.

3. Comparison

To begin with, I should like to call your attention to the principle of systematic correspondences advocated in historical linguistics. I claim that it is also applicable to sign languages for the sake of reconstructions and identifying changes; occasionally, some modification may be necessary, however, as we shall see later.

Note that in the first set of signs (MAN and WOMAN) below, JSL and TSL are more similar to each other than either one to CSL, the only difference between JSL and TSL being the respectively stable vs. wiggly thumb and pinkie.

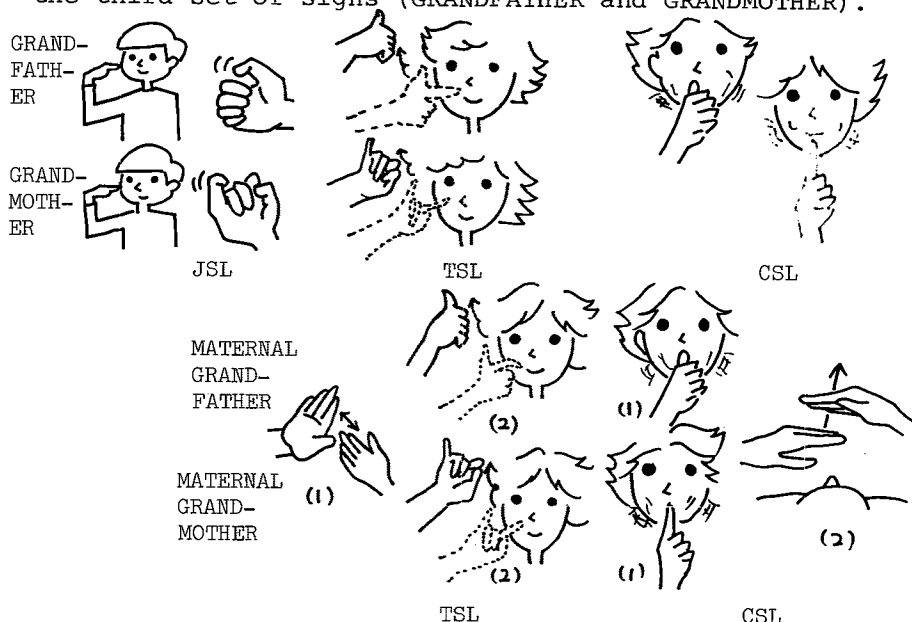


Note now that if the thumb and pinkie are taken to be two independent segments, they recur in the second

set of signs (FATHER and MOTHER) and show systematic correspondences between JSL and TSL. However, one extra segment is added in each case for both signs; namely, the index finger touching the right cheek. This segment is reported in Peng (1974) as a morph meaning "blood relation."



From the first and second sets of kinship signs, it must follow that CSL is drastically different from the other two, for the most part, in having only one segment/morph for each sign which is also dissimilar in form to either JSL or TSL. But now let us look at the third set of signs (GRANDFATHER and GRANDMOTHER).



Notice that in both JSL and TSL the first segment ("blood relation") remains intact, showing another systematic correspondence, but that the thumb and pinkie look slightly different in the two sign languages.

At this juncture, I must make one interesting remark. That is, while in the case of TSL, we can decide to have two extra segments after the first segment of "blood relation," viz, FATHER + FATHER and MOTHER + MOTHER, in the case of JSL, the bent thumb or pinkie (with a counter-clockwise circle) may be thought of as consisting of one segment or two. If one segment, it is a separate morph having a distinct meaning from MAN (in the case of GRANDFATHER) or WOMAN (in the case of GRAND-MOTHER). If two segments, then, the bent thumb or pinkie is like a *portmanteau*, comparable to *du de + le* in French, in which case, the thumb and pinkie each as a segment in JSL may thus be said to correspond systematically to the thumb and pinkie in TSL.

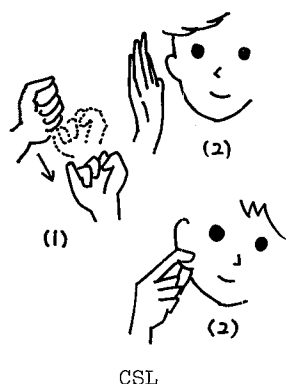
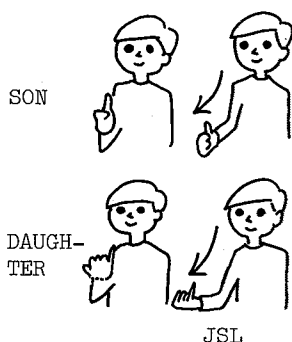
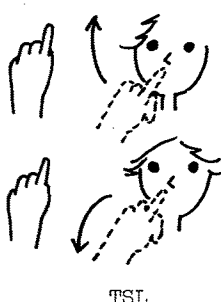
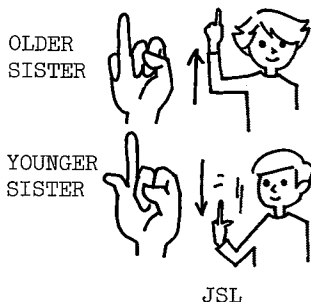
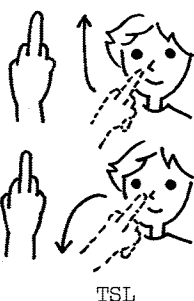
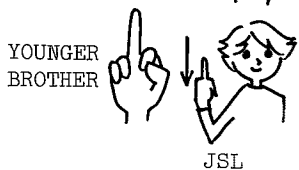
Such correspondences, of course, cannot be found in CSL, simply because it is genetically distinct from the others. However, we find something else in it that is quite intriguing; namely, the distinction between paternal and maternal grandparents, a bifurcation that is alien to, if not totally absent from, Japanese culture. But observe that this bifurcation also appears in TSL, which is to say that the users of TSL are culturally (or ethnologically) closer to those of CSL but linguistically closer to those of JSL, except that when expressing the concepts of maternal parents, the syntax (i.e., the sign order) of TSL (OUTSIDE + GRANDPARENT) is the reverse of CSL (GRANDPARENT + OUTSIDE).

This phenomenon is observable in a good number of other signs which are not illustrated here, a situation that resembles ASL in that it is the JSL system which is adapted into the Chinese context. Such being the case, it is possible to argue that all the signs in TSL that look like (i.e., previously assumed to be cognates with) those in JSL are loansigns from JSL. On the other hand, it is equally plausible to state that it is the kinship concept (i.e., the principle of bifurcation) that is borrowed from the Chinese culture into the linguistic system of TSL, thereby giving rise to the seemingly hybrid forms of maternal grandparents.

In this respect, I should mention in passing that in both TSL and CSL, the forms for paternal grandparents are used as the base from which those for maternal grandparents are (syntactically) derived. I should add, however, that the "puffs of the cheeks" in CSL for GRANDPARENTS could be treated as either a separate segment/

morph (meaning "aged") or part of a *portmanteau* comparable to the case in JSL mentioned above.

So far, I have mentioned only changes in the course of comparison; that is, no reconstruction has been attempted. The next three sets of kinship signs (OLDER BROTHER/YOUNGER BROTHER, OLDER SISTER/YOUNGER SISTER, and SON/DAUGHTER) will now involve the processes of reconstruction, using the techniques from the comparative method and the internal reconstruction.



Note that the two sets of signs for siblings, in the case of JSL and TSL, have one thing in common; the segment for "blood relation" is missing in JSL. Otherwise, everything else corresponds one-to-one between the two sets of cognates, the corresponding segment being the middle and ring fingers and the upward and downward movements of the fingers. So, by applying the comparative method (which would be more apparent if cognates from a third sign language, say, Korean Sign Language, were available), we can see that the original (i.e., proto-) sign for siblings all have the segment for "blood relation" which is lost in JSL but retained in TSL. This external reconstruction is borne out by the internal reconstruction, if we compare the signs for "parents" and "grandparents" within JSL. Recall that in those signs, the segment for "blood relation" is retained, the reason being that without the segment (which is a phoneme by definition) MAN/FATHER, WOMAN/MOTHER, OLD MAN/GRANDFATHER, or OLD WOMAN/GRANDMOTHER could not be distinguished; the function of the phoneme in question (which is also a morph), as in the case of an oral language, is to keep two signs apart. When we come to the signs for siblings, however, there are no other signs in existence that utilize the middle or ring finger alone. Therefore, the deletion (or omission) of the additional segment (or phoneme) for "blood relation" causes no confusion for identification; hence, the change in JSL has taken place diachronically.

One may ask why the same change has not taken place in TSL. The answer is very straightforward: a branched-off daughter language, as in the case of oral languages, tends to be more conservative than its sister language that stays within the domain of the original stock (i.e., mainstream).

How about the signs in CSL? Although, diachronically, we cannot say much about them, synchronically, it is clear that the middle finger and pinkie are used to indicate "different ages," the former being "older" and the latter, "younger," respectively, comparable to the upward and downward movements in JSL mentioned earlier. But observe that while the signs for "siblings" in CSL are expressed as compounds, those for "parents" (or "grandparents," for that matter) are not, which is to say, then, that the thumb and index carry the semantic component of "sex" whereas the middle finger and pinkie do not, because a different segment (for male or female) is added in the signs for siblings.

Ostensibly, this descriptive analysis of CSL may seem irrelevant to my diachronic presentation. But if

other sister languages of CSL (e.g., from Singapore) can be examined, or when techniques of the internal reconstruction are rigorously applied to CSL, descriptive information of the kind just provided will have a direct bearing on the history of CSL.

The set of signs for "offsprings" poses a slight complication in that the signs for both JSL and TSL resemble in part those of CSL (especially the use of the left hand) and in part those of JSL (viz, the right-hand configurations). Furthermore, the signs in the three sign languages all have the downward movement (a segment/morph that means "birth"). To clarify such a complication requires information other than those cited. So, let me add new information below.

Originally, the downward movement in JSL is signed much lower. In some dialects, it is from the pelvis (for obvious reasons) down, outward through the level of the genitals. Because of taboo, it is moved up in JSL, thereby becoming more arbitrary (Frishberg 1975: 700).

The same may be said of the signs in TSL, except that they are two-handed, instead of one-handed. The two-handedness in TSL resembles that in CSL, with one important difference: the hand-shapes in TSL are activated in relation to the trunk, i.e., they are P-type signs in my terminology (Peng 1976 & 1978), whereas those in CSL are activated independently of the trunk, i.e., they are Q-type signs (Peng 1976 & 1978). If this highly important distinction is taken into consideration, then, the TSL signs are cognates of the JSL signs, rather than an admixture of the JSL and CSL signs.

Given this premise, we can now say that the TSL signs have also changed from the pelvic to pectoral area. If this is indeed the case, as I believe it is, the JSL signs have undergone one more change, that is, they have lost the left-hand segment by becoming one-handed signs. In light of this reasoning, we can proceed to reconstruct the proto-signs by restoring the left-hand segment to the JSL signs and lowering the downward movement to the pelvic area. The superficial similarities of two-handedness and downward movement between the reconstructed proto-signs of JSL and those of CSL may, therefore, be attributed to chance resemblances alluded to earlier.

Conclusion

I have in the preceding sections attempted to apply the techniques of reconstruction in historical linguistics to the reconstruction of some proto-signs in two genetically related sign languages. It is clear from the discussions that certain problems with respect to the internal reconstruction have yet to be overcome, for instance, we do not even know how morphophonemics works in sign language, let alone making an attempt at a reconstruction based on information from morphophonemic alternations. Worse still, no sign language has been recorded in writing; the best we can find is the material reported by l'Epée in 1776 and by Long in 1918 (which were the main source of historical information in Frishberg [1975]). This means that attestation of reconstructed signs is next to impossible.

Such being the situation we face, the only alternative is to rely more on the comparative method by sharpening it for adaptation in the determination of genetic relationships among sign languages of the world and the reconstruction of proto-languages therefrom, once the genetic relationships are ascertained. The demonstration of such distinctions as P-type and Q-type signs (unheard of in oral languages), for instance, is a good case in point for the sharpening of the techniques. To do so, however, we need more descriptive analyses of sign language throughout the world, of which the project at the International Christian University supported by the Ministry of Education is one such first step in this direction.

NOTES

1. I have in Peng (1976 and 1978b) proposed a notational system which, however, will have to be tested in a wide range of cases before it can be utilized for such occasions.
2. In oral languages, for instance, English and German, "we know that the early literature was produced in the North, but virtually all materials have come down to us in West Saxon, the dominant dialect at the end of the ninth century" (Lehmann 1973:35).

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PREGNANT AND SPECIFIC OBJECTS
A Collocational Investigation of Recognize and Realize*
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1. The main purpose of this paper is to show how recognize and realize can be used to illustrate lexicalization processes that underlie the establishment of "frozen", or highly restrictive, verb/object-collocations (this will be shown in the analysis of the collocation shirk duty in 7). Also, it seems that these verbs can offer a tentative explanation of "frozen" adjective/noun-collocations (see my article on apex- adjectives 1976). As such restrictive collocations seem to be intimately linked with the essence of metaphorical processes, this paper will also be an attempt to shed light on such processes. But before this can be done, we must analyze the meanings of the two verbs by means of the "collocational approach", i.e. the meanings of the two verbs will be elucidated by a close investigation of their collocational patterns. The hypothesis concerning the integrity of lexical items, used consistently in my previous research, will serve as the basis of this analysis. This implies that a word has a unified abstract "core"-meaning, which is given various references on the basis of various situational and linguistic contexts. Thus, the "primary" verb take (see Ruhl 1974) in "The thief took the jewels" is apt to be paraphrased as 'steal' (by linguists as well as by lexicographers). However, this gloss is too concrete because the abstract meaning of take is impregnated by referential stuff which is based on pragmatic inferences, i.e. thief and jewels are signals to the decoder that take should be "read" 'steal'. Thus, the specific meaning of take, a highly abstract concept which recurs in all the uses of take, realizes, 'makes real', the pregnant variant of take. Also, in the above example, take is recognized, 'taken into cognizance again', as steal. The pregnant take, or rather, the concept underlying this form, also realizes, 'makes real', the specific take, i.e. a concept (content) is crystallized in a specific form, and this content is always more complex than the abstract concept underlying the specific take. Thus, we see that the object of realize is specific whereas the object of recognize is pregnant.

- 1.1 The majority of the examples have been taken from the text material which is generally referred to as "The Brown Corpus", but a number of novels have also been included into the corpus. The examples whose source is not indicated derive from "The Brown Corpus".

* This is a shorter and slightly altered version of an article that will be published by the Department of General Linguistics at Umeå University, Sweden.

2. Compare the following examples:

- (1) I realize your problem, but I don't think you have tackled it in the right way.

This example was offered by Professor Bolinger (personal communication), who would not accept realize problem without the sequel but...; this is confirmed by the fact that most informants rejected the collocation "I realize your problem". However, in an informant investigation, where the respondents were asked to fill the gap with either realize or recognize, realize was the first choice in (2), and recognize dominated in (3):

- (2) After meeting my friend I realized his problem.

(42 responses realize/20 responses recognize).

- (3) He recognized the problem and decided to do something about it.

(48 responses recognize/14 responses realize).

I will claim that and and but are, as it were, the semantic kernels of recognize and realize, and if we cut up these kernels, the other collocational patterns will spring out, thus illuminating the semantic essence of the verbs. The following examples indicate that these sequels are indeed important for the two verbs:

- (4) ...the pervasive influence of ideology on our political judgement needs to be recognized and taken into account.

- (5) He spoke briefly, sensibly, to the point and without oratorical flourishes. He made good, plain American common sense, and the House recognized it and acted upon it.

- (6) The government has recognized the dilemma and is beginning to devise some moral education for schools.

- (7) The physical education program for man recognizes the value of participation in competitive sports in the development of the individual student and aims to give every man an opportunity to enter some form of athletic competition...

- (8) But as months passed by and, after that, the first few years, Adam's passion lessened. For either of them it could never have sustained itself at the original frenetic pace. Erica realized that. But what she had not expected was that the decline would come as early as it had, or be so near-complete. (Hailey)

- (9) In an adroit way, Heyward realized, their host had maneuvered Harold Austin and himself into the stance of supplicants -- a reversal of the banker's normal role. But the fact was, any connection with the Supranational would be worry-free -- as well as prestigious for FMA. (Hailey)

- (10) Sid Cripps looked out of the window and cursed under his breath. The meadow was full of American tanks -- at least

eighty of them. He realized there was a war on, and all that, but if only they'd asked him, he would have offered them another field, where the grass was not as lush. By now the caterpillars would have chewed up his best grazing. (Follett).

(11) He should not have let himself be drawn into a discussion about Vernon Demerest, he realized, but news of the adverse snow report and the nuisance effect it would have, still rankled. (Hailey)

Even though has the same implication as but in:

(12) Pierre had been understanding, realizing that something serious had occurred, even though Adam hadn't gone into detail about the sudden phone call. (Hailey)

2.1 Let us first consider (2). It can be paraphrased in three significant ways:

(13) I did not realize my friend's problem until I met him.

(14) Only after meeting my friend did I realize his problem.

(15) I made the mistake of not thinking that my friend's behaviour implied 'act to solve problem'.

These three examples form an important "guide" for us in our pursuit of significant collocations of realize:

Negations: (very frequent)

(16) 'What I hate,' said Prewett, 'is to see Evy crawling to those swine. He doesn't seem to realize he's worth ten of each of them! (Follett).

(17) He didn't seem to realize the trouble his absence had caused. (Innes)

(18) 'Is the camera all right, Colin?' He didn't seem to realize he still had it gripped in his other hand, cradling it on his stomach. (Groom)

(19) I never realized you believed in God so ardently. (Mc Cullough)

Only

(20) We have only to think of Lady MacBeth or the policeman-murder in Thomas Burke's famous story...to realize that hands often call up ideas of crime and punishment.

Mistake (the main collocate of realize in my material)

(21) The moment the words were out of her mouth, Kate realized her mistake. (Sheldon)

2.2 Only often has a focalizing function ("just think of MacBeth" in (20), which implies that "Lady MacBeth etc." is a "conspicuous" perception that causes one to literally see the fact "that hands..."). Another implication of this is that realize itself is conspicuous, i.e. it is dynamical in its semantic function in that it negates a negation. Example (16), it seems to me, can

illustrate this very effectively: if only he realized that he is worth NOT not more than... , then he would realize that by not crawling. This shows the "practical implication" of realize ("by doing"), which is also manifested in collocation with seem, suggesting: to judge from his acts, he does not realize. The dynamicalness of realize may be illustrated in this schema:

not worth more	State 1: "assumed" state
(not)not worth more	State 2: "real" state
NOT not worth more	State 3: insight into real state

The brackets around not in State 2 signify a dormant condition for the concept (not) not worth more, i.e. it takes some time before a "conspicuous" perception occurs, thus reversing the "assumed" state into the "real" state, and when this occurs, at a crucial point of time, he is expected to cease with his humiliating behaviour. What happens then can be described: he NOT not see (realizes) that he is NOT not worth more. The "blown-up" NOT (written in capitals) is then transferred to the object of realize, attaching a feature of drasticalness to "I'm worth more", which is thus "raised", as it were, into "worth ten of each of them". This proposition is given a heightened note of drasticalness by only, which suggests "not more than realize", i.e. it is stated ironically that "worth ten..." is not more than enough. This shows the specificity of the object of realize in example (2): the noun problem is marked in itself because it means 'encounter difficulty' + 'show a constructive attitude/take a constructive action'. The situation is the following: prior to (2) I could see that he was facing difficulties, but I failed to see that he was tackling these in a way that hinted that he considers it a problem. But then, at a crucial point of time, it dawned on me that my friend indeed tackled his difficulties with a systematic constructiveness that justifies the term problem. Here, the "blown-up" NOT in NOT not constructive attitude attaches itself as a mark on 'encounter difficulties', thus creating the word problem. But what is realized is not more than enough to justify the word problem, which is thus specific.

2.3 Now, we shall consider two other sentences which confirm this analysis:

(22) As he relaxed, he realized how tense he had been.

Earlier, he had assumed that he was fairly relaxed, but now that he was experiencing the genuine, "real" state relaxed, it suddenly dawned on him that his earlier assumption had been false, i.e. the "assumed" state not tense is conspicuously reversed into the "real" state NOT not tense. There are two realizations: the "practical" one: "I realize the sensation relaxed", and the "linguistic" one: "I realize what the designations relaxed and tense really stand for". The latter realization is specific, i.e. the significance of the words relaxed and tense is realized at the crucial point of time when the sensation tense passes over into not tense. The implication is again: "no more than the sensation not tense is

needed to realize tense". We note here the circularity of realize:

(23) Sensation realizes (fills with content) word, and word realizes (conventionalizes: I can now really name my experience) sensation.

The human surface subject thus merely functions as the mediator between these two entities.

(24) "Wally can't go any place at this hour." -- "Well, then, I'll get out." But she looked uncertain. She was coming to her senses enough to realize you cannot go traipsing off anywhere at two in the morning.

The "blown-up" NOT specifies here the mark which is explicitly tagged on to go, occurring in the preceding context as get out. Thus, not go traipsing is specific in exactly the same way as problem, because the negation in this example (the implication is: at first, she did not realize) yields: NOT not more than enough, i.e. more than go is go traipsing.

3. The correctness of the structure in (23) seems to be confirmed by:

(25) The sensation he so overwhelmingly realized was one which told him he had been there before but he knew he had not, and could not recall any place he had visited that could be likened to the limpid green water or the little fountain-falls or the green demon imprisoned beyond his reach.

A human being is constantly exposed to sensations, but only those which are conspicuous enough to initiate a search for a means of communication are lexicalized, or realized. The conspicuousness in (25) is explicitly stated in overwhelmingly. In order to be lexicalized, a sensation must form a conceptual entity. This entity-character is formally indicated in one, which focalizes the object of the "linguistic" realize ("sensation realized he had been there before"). Such focalizing devices are typical of the object of realize :

(26) More realized the fantastic thing that had happened. The gipsy had been sheltering from the rain under the porch, and without noticing it, he had been leaning his shoulder against the bell. (Murdoch)

Realized what had happened/what was odd/strange are other collocations that indicate the linguistic significance of realize.

3.1 The following two examples clinch the argument as to the specific nature of the object of realize. Also, (28) should be compared with (25) in that the metaphorical squelch expresses a conspicuous sensation that presses for lexicalization.

(27) The Unks, a plurality having nothing to do with Justine O'Neill. Simply members who drifted in and out of the home-
stead, smiled at her shyly, avoided her if it meant conversation. Not that they didn't like her, she realized now: only that they

sensed how foreign she was, and it made them uncomfortable.

(28) A figure squelched on the veranda. I didn't realize it was a young woman, not immediately, for she was tall and broad-shoulderded, dressed like a hardened safari hunter in... (Innes).

These two examples can be analyzed by means of but only: "realize NOT not like her, but only when she disregarded the non-specific features 'smile shyly', 'avoid', (these features only realize that they sensed how foreign she was); "realize NOT not a young woman, but only when I disregarded the non-specific features 'tall' etc., i.e. "only when I perceived an inalienable feature 'young womanness' did I realize it was a young woman." Of particular interest is the fact that (27) corroborates my hypothesis that realize negates a negation.

Collocations of realize

4. One of the basic claims of the "collocational approach" is that the main collocate of a word condenses all the collocational and semantic properties of this word. It will be obvious from my hypothesis as to the main function of realize being to reverse an "assumed" state into the "real" one that this is exactly what mistake does. Also, mistake echoes, or resonates (Peter Fries' term), the note of 'urgency' in realize. This note implies that it is considered important that this reversal takes place as soon as possible, which in turn implies that the most significant collocates of this verb are such as denote time:

- 4.1 1 suddenly/instantly (suddenly is a conspicuously frequent collocate)

(29) No one saw the flash, but the single crump of a mortar incoming reverberated up the hillside. People began to shout and curse, and in the few seconds before it landed, Holden suddenly realized he'd made his first mistake a few hours earlier by not looking into the comings and goings of the women, carrying rice into the huts -- because damn it, there wasn't any harvest yet, so why should... (Groom)

This example also shows (note damn it) that the encoding process takes place on the spur of the moment, as it were, which confirms my claim that realize illustrates a lexicalization process in that it shows how a conspicuous sensation is 'made real' by lexical form.

(30) He made a grab at David's gun, which was an error. He should, he instantly realized, have drawn out his stiletto and stabbed David. (Follett)

These collocations resonate the dynamic punctuality of realize.

- 4.2 2. now/then

(31) In her mind Elizabeth could see Mlle. Harriot, with her gently swelling breasts, and her long legs, and she would wonder what she would look like naked in bed. It was then that the full realization stunned Elizabeth. She was a

Lesbian. (Sheldon)

Note the sensuousness of the verb indicated by see and stunned. See also example (27) (now). These collocates resonate the concept 'crucial point of time' that resides in realize.

4.3 3. too late

(32) He picked up a white cloth from a chair to staunch the flow of blood, and too late realized that it was his shirt. (Follett)

Mistake could be inserted here.

4.4 4. later

(33) Beyond his readiness, Big Rufe seemed strangely indifferent -- probably, Erica realized later, because he had known of the danger in the first place, and accepted it. (Hailey)

4.5 5. take + specification of time

(34) A sudden gale swept through the room, swishing the papers through the air, then died away. It took Elizabeth a moment to realize what had happened. She was no longer alone in the house. (Sheldon)

5. RECOGNIZE

Let us first consider (5), which can be analyzed: recognize the properties of the verb speak, explicitly stated, as common sense, which in turn is recognized as worthy to act upon. Thus, common sense is doubly marked: properties of speak impregnate the "call"-noun, because they activate memory tracks of a set of perceptions of similar properties (these are 'taken into cognizance again'), and an appropriate act also impregnates this noun. This specific act has suggested itself as the above-mentioned set was accumulating; it may be said to be based on a pragmatic inference: features of this set of perceptions constituting common sense usually release a certain act. This latter "active" mark is the "conspicuous" mark releasing recognize. This verb is concessive in that an intention to act or a pressure to interpret the recurrence of specific marks is yielded to. The sequel and thus indicates that the object of recognize is pregnant and that it is a "call"-word, i.e. it is a relexicalization of a set of basic perceptions. Consider for example:

(35) I recognized the figure as John Smith.

Two perceptions are involved here, the first one being unlimited, i.e. all the properties of figure were registered. The second perception has "limited applicability", however, since only the distinctive marks of figure, i.e. those marks that justify the name John Smith, are registered. (35) can be rewritten:

5.1 name John Smith, are registered. (35) can be rewritten:

(36) I look upon the 'John Smith-like' perception in a way, as if it was identical with the unlimited perception of the

figure.

The "as if"-clause filters out the "adjective", i.e. the "call"-word, which is then transferred to a position in front of the second recurring perception. The noun way resembles recognize in that it seems to be a "carrier" of metaphorical "call"-words:

(37)... several scholars are edging their way cautiously towards the acceptance of the "shore occupied by" position.

(38) She was threading her way in the street.

Note that these examples support my claim as to the integrity of words in that way in "she was sitting up in a virtuous way" has the sense 'path' of (37) and (38), which implies that the verbs that are modified by way have a more complex structure than the verbs collocating with manner, i.e. they express a specific behaviour: once you have chosen a way, a 'path', you stick to it. Way can modify look:

(39) He didn't look that way last time I saw him. (Innes)

This seems to indicate that way includes an "asif"-component, since look is often followed by "as if":

(40) He looks as if he were ill.

(37) can be rewritten:

(41) I look upon the 'cautious' perception, as if it was identical with the set of perceptions 'move towards the edge of a cliff'.

Now, a mark, a pragmatic inference, is attached to this basic set in the form of cautious, and this adjective forms the conspicuous perception. The encoding process can be described: their behaviour is so cautious; as if they were edging.. This process can be illustrated by means of recognize:

(42) I recognize their cautious behaviour in recognizing all perceptions of 'move towards the edge of a cliff' as EDGE.

5.2 Crashing bore is a "frozen" collocation (see Bäcklund 1976). The origin of the metaphorical extension of crashing may have been:

(43) I look upon a 'clumsy' "bore-act", as if it was identical with all perceptions of "The elephant crashed through the jungle"/"The stone crashed through the window" etc.

Crash is extended to comprise the concept extremely boring'. Something can be recognized as crashing, only if it realizes and is realized by e.g. "The elephant crashed...", i.e. only if the conspicuous perception justifies the form crash, and the form crash vivifies this perception, can this recognition take place. Example (35) is similar: only if the figure (distinctive marks) realizes the basic perception of figure (all properties registered) and only if this basic perception realizes the repeated perception can John Smith be recognized. Note that the second realization is

double, as it were, since its subject is partly all the registered properties of figure and partly the filtered mark, John Smith. It would seem to be profitable to apply the schema in (36) to verbs with restrictive collocations, for example shrug shoulders, purse lips and shirk duty, since these verbs have what I have termed contextual cohesion, i.e. semantic components that are inherent in these verbs have a tendency to "leak". Thus, I have found such collocations as shrug carelessly/noncomittally/casually and purse lips thoughtfully/mournfully etc. Moreover, these verbs are usually metaphorical. Purse, for example, means 'contract lips as if it was the mouth of a purse'. At the end of the paper I will discuss shirk duty, but before doing this we shall look at the collocations of recognize.

The collocational patterns which will be listed below are all manifestations of the posited sense of recognize, 'take into cognizance again'. This sense implies that the mental process denoted by recognize is gradual (Point 1), that it is based on knowledge about a semantic set of perceptions, i.e. a set that is tied together by a specific semantic feature, which in turn constitutes the basis for a skill (see could in (51) and (52)) which is required to perceive distinctive marks in a recurring perception (Point 2). The "active implication" of recognize, which is apparent in examples (4) through (7) and in the main collocate problem implies that this verb denotes an intentional act (Point 3). The most important point, however, it seems to me, is Point 4, which illustrates the fact that a "conspicuous" perception is often given a name in the form of a metaphor. Crash in (43), for example, is 'taken into cognizance again' in the sense that its semantic function is extended to comprise the concept 'extremely boring' (this also applies to shirk, as we shall see). Points 5 and 6 are intimately linked with Point 3. The range of nouns in the function of object is dominated by such as can be recognized as "worthy to act upon", as desire, importance, need, value etc.

- 6.1 1. Come to
Recognize is a gradual process, whereas realize is instantaneous and punctual:

(44) It was the posture which the men had come to recognize as that of Killpath defying his ulcer.

There are four other cooccurrences with come to.

- 6.2 2. allow/possible/can

(45) I couldn't recognize him at first.

(46) It has in fact become possible to recognize levels of grammaticality, and thus of deviance, by finding out at what depth of a generative process a given construction deviates from normal. (Chatman)

(47) Because of the unique advantage of the psychoanalytical situation -- the fact that it allows one to recognize pretty accurately what is going on in the partner -- we can give an unequivocally negative answer. (Horney)

Recognize is intentional, whereas realize is passive (forced to realize occurs twice in my material). Compare these two examples:

(48) Consequently, he is mortally frightened at the prospect of having to change, and shrinks back from recognizing the necessity for it. (Horney)

(49) She went to the rear of the cruiser where the policeman had the door open for her to enter; then shrank back when she realized the interior was barred and she would be locked inside as if in a cell, (Hailey)

Shrink back from in (48) implies that the courage necessary to perform an intentional act is lacking, whereas shrink back in (49) is an involuntary emotional reaction to an unpleasant realization, i.e. you realize something by doing something (see above). This "practical implication" of realize is also very clearly resonated by the main collocate mistake: at the moment it is seen that an ongoing act is a mistake, the act is stopped (or some other measures are taken to rectify the mistake).

6.3 3. The intentionality of recognize is resonated in collocation with verbs denoting obligation:

(50) The value of this must be recognized.

6.4 4. "Deviate from normal" in (46) focusses, I think, the essential meaning of recognize, since that which stands out as being distinctive presses for a name, i.e. it is 'taken into cognizance again'. Compare such collocations as "he was recognized as the best teacher/as king". Consider also:

(51)...occupied by radio operators who could recognize a spy by the way he tapped out a message. (Follett)

(52)...watching a bateleur, which I could now recognize by its distinctive crosslike shape against the blue sky. (Innes)

Note the metaphorical crosslike, which is the adjective that is filtered from all the "basic" perceptions of bateleurs.

(53) If there is such a thing as a recognizable style, whether of a work or an author, or an entire period of literary tradition, its distinctive quality can in the last analysis be stated in terms of relative frequencies. (Chatman)

6.5 5. Problem. This is the main collocate of recognize, because it is a marked noun, and recognize as it were fills this mark with a specific content that is based on earlier experiences of how a

certain problem was solved:

(55) 'On the contrary, we have recognized that a genuine problem about noise exists, and have done our best to deal with it. (Hailey)

(56) I think we all recognize the problems facing the Government of the East African confederation. (Innes)

6.6 6. When + recognize + subsequent act (Cf. the sequel and...)

(57) When this narcotic effect of exaggerated pain is recognized we have further help in finding understandable motivations in masochistic drives. (Horney)

Four other instances of this structure have been found.

7. We shall consider again the capacity of recognize to shed light on metaphoricalization processes, notably the processes by which restrictive collocations have been created. Shirk is almost monopolized by duty, i.e. duty dominates strongly over all other nouns in the function of object of shirk (the closely related responsibility is also relatively frequent). Consider the following examples and definitions of shirk:

(58) The attorney general has ordered the local police that it is their duty to enforce the blue laws. Should there be any evidence that they are shirking, he said, the state police will step into the situation.

(59) shirk: "to evade the performance of an obligation because of laziness." (Webster)

(60) shirk: "to walk evasively; sneak away/out." (OED)

Let us assume that there is indeed evidence of shirk in (58) in that the police use their forces mainly to "chase thieves" rather than "enforce blue laws". Then, we get the parallel structures:

(61) chase thieves instead of doing their duty.

(62) walk evasively instead of doing their duty.

The latter "instead of" is a natural mark of "walk elusively", i.e. "walk elusively" can be recognized as "not do their duty", or can be recognized as shirk duty. Consider the next two examples:

(63) I recognize 'lazy' "chase thieves instead" in recognizing "walk evasively" as SHIRK DUTY.

(64) I look upon 'lazy' "chase thieves instead" in a way, as if it was identical with the set of perceptions "walk evasively".

Lazy is the adjective that is filtered out of the basic set of perceptions (the "as if" - clause in (64)). Lazy "chase thieves" realizes and is realized by "walk evasively", or, rather, by

shirk. Now, (61) and (62) can be rewritten shirk in their duty, or be shirking in his duty (note the -ing-form in (58)). I am claiming in my ongoing research on verb/object-collocations that the verbs with restrictive collocations are adjectival, and this seems to be the case with shirking in (58). Now, "adjectives + in + noun" shows a tendency to develop into "adjective + noun". "He was raving in lunacy"/"He was rapt in his attention" yield raving lunatic and rapt attention. And, consequently, shirk in duty yields shirk duty. This example shows how "walk elusively" realized as shirk is extended to comprise the definition given by Webster in (59). This extension is achieved by the double realization referred to above (see example (36)): all the sensuous details of the perceptions "walk evasively" suddenly realize shirk duty, and the filtered adjective lazy also realizes shirk duty. This process is rather like the process by which an ordinary word extends its range to subsume so-called "fuzzy concepts". Consider:

(65) I look upon 'tablelike' perception as a way, as if it was identical with all perceptions of objects that are denoted by table.

The situation is the following: a person is confronted with an object which is conspicuously confusing; the conspicuousness initiates an act of linguistic creativity: "what shall I call this object?" Then, suddenly, it dawns on the observer that it can be called a table. At this crucial point of time two things happen: he is suddenly overwhelmed by the memory tracks of all perceptions of tables. These tracks suddenly realize the confusing sensation, thus conceptualizing the "conspicuous" perception. This realization is "magic" in that "as if" is so to speak erased. The second realization "conventionalizes" the concept in that the filtered adjective in the "as if" -clause in (65) realizes tablelike. This realization makes communication possible, i.e. the "conspicuous" perception has been given a name and can thus be conveyed to other people. Thus, we see that 'tablelike' perception realizes table, and table realizes 'tablelike' perception, and only then can the following recognition take place:

(66) I recognize 'tablelike' perception in recognizing all earlier "table-perceptions as TABLE.

Thus, it seems that realize is a "deeper" process than recognize, which tallies with the collocational patterns of the two verbs. It also agrees with the hypothesis that realize has specific objects: only when the observer disregarded certain distracting features did he suddenly realize he was facing a table (cf. examples (27) and (28)).

8. This paper shows that it is profitable to start a semantic analysis of words with the working hypothesis that they have a unified meaning. I think I have managed to show that the posited senses for the two verbs, 'make real' (realize) and 'take into cognizance again' (recognize) can lead to the insight into the semantic significance of various collocational characteristics as well as into the relevance of the two verbs for various lexicalization

processes. Thus, it has been demonstrated here that the "collocational approach" is a valuable method in the treatment of semantic issues of a general theoretical interest.

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ON ENGLISH NEGATIVE INTERROGATIVES¹

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In his Guide to Patterns and Usage in English, A. S. Hornby states that negative interrogative sentences are 'formed by placing not after the subject in formal written style, or by the use of the contracted negative forms in spoken English and often in informal written style' (1975:3). Although variations in the wording may be possible, one finds the same rule in several grammars, such as Broderick (1975), Keyser and Postal (1976), and Quirk et al (1972), to mention just three. Grammarians seem to agree that sentences such as (1) and (2)

(1) Is Melvin not sick?

(2) Who did Jack not call?

'sound formal and pedantic' (Keyser and Postal 1976:367), whereas the corresponding contracted sentences would be preferred 'in informal spoken English' (Quirk et al 1972:390).

If we accept the rule as formulated by Hornby and others, it follows that uncontracted negative questions with the word not before the subject NP are ungrammatical, and, sentences like (3) and (4)

(3) Has not Nicholas been listening to the chancellor?

(4) Is **not Steve** here?

have indeed been asterisked by Broderick (1975:127) and Orosz (p. 233) respectively.

By presenting contracted and uncontracted negative questions like (5) and (6)

(5) Haven't you heard the news?

(6) Have you not heard the news?

¹ I am grateful to Professors Beverly S. Hartford and Fred W. Householder, both of Indiana University at Bloomington, for their comments on an earlier version of this paper.

side by side, grammars create the impression that, stylistic differences apart, such questions mean the same (cf. Leech and Svartvik 1975:246).

My purpose in this paper is (1) to illustrate the existence of an Operator + not + S + predication (cf. Quirk et al 1972) pattern in English, which is the third way of forming negative interrogatives; (2) to show that uncontracted and contracted negative questions can greatly differ semantically; and (3) to present the results of six elicitation experiments I conducted to explore this area of English syntax.

1. First, I quote a few sentences which are all in apparent violation of English grammar:

But have not a good many scholars been about that task for a considerable period of time? Hymes (1974: 125);

But does not the methodology of comparative linguistics imply thinking in terms of internal reconstruction? Austerlitz (1978:1);

Why should not our children be taught Greek?

Seaman (1972:85);

... was not something lost because the authors necessarily lacked a personal acquaintance with the life and the atmosphere of the times ...? Shirer (1960:ix);

Is not linguistics really a branch of psychology... ? Lass/Wunderlich (1979:12).

In addition to printed essays, one finds an abundance of similar negative questions in The New Oxford Annotated Bible as well, e.g.

Will not their cattle, their property and their beasts be ours? (Gen. 34.23);

Did not the LORD bring us from Egypt? (Judg. 6.13);

Shall not the world tremble on this account ... ? (Amos 8.8);

Is not the LORD in the midst of us? (Mic. 3.11);

Why has not the son of Jesse come to the meal, either yesterday or today? (1 Sam. 20.27).

By way of a historical aside, I have compared 88 negative interrogative sentences in The New Oxford Annotated Bible (1977) with corresponding places in the King James Version (1611). In 28 instances both translations have Operator + S + not + predication; in 21 out of the 88 instances compared, the Operator + not + S + predication pattern in the King James Version has been changed to Operator + S + not + predication in the new Bible. In only two cases have I found examples of the reverse of this latter trend, i.e. where, for instance,

... did they not let the people go ... ? in the King James Version (1 Sam. 6.6) corresponds to ... did not they let the people go ... ? in the 1977 Bible. In 27 cases not precedes the subject NP in both translations; the remaining 10 instances being, from our point of view, incomparable, such as, for example, Know ye not this parable? (Mark 4.13) and Do you not understand this parable? Thus the data show that Operator + S + not + predication (hereafter S + not) type questions have been gaining ground at the expense of Operator + not + S + predication (not + S for short) type questions.

2. A Similarity Test (cf. Greenbaum and Quirk 1970:5-6) has been administered to 17 freshmen and sophomores at Indiana University to determine the degree of similarity of meaning between various contracted and uncontracted negative interrogative sentences (cf. Appendix 1). Some of the results follow.

2.1. Except for one case to be discussed separately in 2.4. below, most testees regarded S + not type questions and their corresponding contracted negative interrogatives as similar in meaning (cf. items 2, 4, 10, and 12 in Appendix 1). In 22 cases out of 68, however, subjects thought the test sentences were either dissimilar in meaning or between similar and dissimilar, thus giving some support to Bolinger's observation (1975:528-9) that some speakers prefer Is it not sweet? to Isn't it sweet? as a plain (i.e. non-conductive) negative question. (A contracted negative interrogative is called a conducive question if its speaker expects, wants or desires a 'yes' answer. If the question is neutral as to a 'yes' or a 'no' answer, it is called plain or non-conductive; cf. Bolinger 1975:528-9 and 1957:99-101.)

2.2. The not + S and S + not type questions (item 6 in Appendix 1) were judged to be similar in meaning by 10 subjects, dissimilar by 3, and between similar and dissimilar by 4.

2.3. The not + S construction and its contracted variant as tested on item 14 in Appendix 1 were judged similar by 14 out of 17 subjects. Only two thought they were dissimilar in meaning, with one subject hesitating between similar and dissimilar.

2.4. The one case where testees judged an S + not question different in meaning from its contracted form was in (7) and (8)

(7) Didn't almost everybody go?

(8) Did almost everybody not go?

(cf. item 8 in Appendix 1). The reason for the meaning

judgment 'dissimilar' is the presence of the quantifier almost everybody in the subject NP. As Jackendoff (1969: 230) puts it, 'the presence of a quantifier in the subject does lead to a difference in truth value between the S and VP negation,' although the S and VP negations of sentences with no quantifier in their subjects will be logically synonymous. Thus, in negative interrogative sentences like (7) and (8), the surface difference is tied to a difference in meaning in such a way that contraction carries sentence negation (Is it not the case that almost everybody went? being synonymous to (7)), and uncontracted sentence form carries VP negation (Is it the case that almost everybody did not go? being synonymous to (8)).

3. In addition to the Similarity Test, two more judgment tests and three performance tests (cf. Greenbaum and Quirk 1970:3 ff.) were administered to various groups of subjects. The judgment tests included the Acceptability Test and the Style Test. The performance tests comprised the Uncontraction Test (a selection test), the Negation Test (a word-placement test), and the Both Ways Test (another selection test).

3.1. The Acceptability Test sought to explore the subjects' attitude to contracted and two-ways uncontracted forms of five test sentences (cf. Appendix 2). Generally speaking, results show that subjects preferred contracted sentences to both varieties of uncontracted forms: in 71 cases out of 85, subjects thought contractions were acceptable and they would use them; in 41 cases out of 85, not + S type questions were deemed unacceptable; and in 47 cases out of 85, S + not questions were regarded as sentences which the subjects would not use under any circumstances.

3.2. The same set of sentences as was used in the Acceptability Test was used in the Style Test with the same group as took the Acceptability Test. The overall results show that subjects tended to evaluate contracted questions as colloquial, whereas not + S questions were most often termed frozen style, and S + not ones were judged as lying between colloquial and frozen (cf. Appendix 3). By taking the labels with the highest scores for the three question forms in both the Acceptability and the Style Tests, we may characterize the question forms under investigation as follows:

contracted	acceptable	colloquial
not + S	unacceptable	frozen
S + not	unacceptable	between

(N.B. 'unacceptable' here stands for 'under no circumstances is it acceptable, I would never use it' [cf. Appendix 2]. Admittedly, 'acceptability' and 'usability' do not necessarily coincide for every speaker. It might be the case that the labels 'usable' and 'unusable' would better describe my subjects' attitude to the test questions.)

3.3. The Negation Test, administered to 27 subjects, was designed to investigate the position of not in uncontracted negative interrogative sentences (cf. Appendix 4). Results show that in over 55 % of all cases testees positioned not after the subject NP, in about 25 % of all cases they placed not before the subject NP, while in the remaining cases subjects' responses were non-compliant (cf. Greenbaum and Quirk 1970:19 ff.). These results clearly show divided usage.

3.4. The Uncontraction Test was designed to investigate whether S + not or not + S questions will be preferred when subjects are forced to uncontract. In over 19 % of the cases subjects gave S + not forms, whereas in over 43 % of the cases the not + S form was used (cf. Appendix 5).

In the light of the results of the Negation Test and the Both Ways Test, S + not can be considered a more frequent question form than not + S. That the Uncontraction Test shows the reverse of this is, at least, remarkable. As a first approximation, it can be hypothesized that the unusual task of uncontraction which subjects were required to perform, and a probable syntactic bias effect inherent in the Uncontraction Test itself, may have played a combined role in increasing not + S responses beyond expectation. This hypothesis receives some support from the fact that the Negation Test and the Uncontraction Test were administered to the same group of subjects, with a month's interval between them.

3.5. The Both Ways Test (cf. Appendix 6) required subjects to determine for each of 10 contracted negative interrogative sentences whether they could be uncontracted to S + not form, not + S form, or both. 9 out of 25 subjects gave only one answer to each test item, the remaining 16 giving two answers to at least one item in the test. In Subgroup A (i.e. the 9 students not giving alternative forms) S + not form questions were given over three times more often than not + S form questions. In Subgroup B, where testees did give alternatives, S + not form questions numbered almost twice as many as not + S form questions. This test has once again demonstrated divided usage. It has also shown S + not to be more

readily used, or more frequent, than not + S.

4. Having demonstrated the existence of, and some speakers' attitudes to, the not + S form of English interrogative sentences, it should now be determined what function such sentences in English have. How are they functionally different from S + not sentences, if they are different at all? I will argue that they are different, and their function is conducive.

4.1. The case for the functional difference can be made by the result of No. 6 on the Similarity Test: 7 out of 17 subjects said that Was not something lost? and Was something not lost? did not mean the same. In addition to this as yet unspecified meaning difference, not + S sentences have most often been labeled 'frozen' by subjects, whereas S + not sentences have been labeled 'between colloquial and frozen', thus, it seems that the syntactic difference corresponds to some stylistic difference.

4.2. The terms CONDUCTIVE and CONDUCTIVENESS have not been very well defined (cf. Lees 1960:123 for a short criticism). A question can be both conducive, i.e. 'one that shows that a given answer is expected or desired' (Bolinger 1957:97), or non-conductive, depending on the context in which it is uttered. To take Bolinger's example (1957:101), if a man's wife complains that she cannot hang-out the wash, her husband's question Isn't the sun shining? will have different meanings if spoken in different settings. If the husband is in the house and the blinds are drawn, i.e. if he has no reason to believe that the sun is shining, his question is non-conductive, a true yes/no question, roughly meaning the same as Because the sun isn't shining? However, if he is outdoors in full sunlight, his question will be conducive, roughly equivalent to The sun is shining, isn't it?

According to Bolinger (1957:100-1), the distinctive form of conducive negation is reversal of polarity. In 'implicit reversals' it is required that 'the entire proposition be negated, which in turn depends on the negative's being an IC of the auxiliary verb, and this is best marked by contraction.' Thus a negative question 'without a contracted negative is not likely to be conducive.' If this last remark of Bolinger is correct, then the speaker who wants to use conducive negative questions without, however, using contractions, can only do one thing: use not + S questions. I have two arguments for the conduciveness of not + S, and a sort of negative argument.

Firstly, if the examples from printed essays in 1. above are quoted in context, they all turn out to be conducive:

'What is the task of sociolinguistic research? It is, in my view, to lay the foundations for an adequate understanding of the place of language in social life. But have not a good many scholars been about that task for a considerable period of time? Very partially, and very inadequately. The plain fact is that speech, the true nexus between language and social life, has been largely neglected. It has not been studied in its own right.' Hymes (*ibid.*)

'One would think that historical work with Finnish should not require such acrobatics. But does not the methodology of comparative linguistics imply thinking in terms of internal reconstruction? It does, but ...' Austerlitz (*ibid.*)

'Thousands of American school children are taught a foreign language in thousands of American Public Schools. Why should not our children be taught Greek?' Seaman (*ibid.*)

'Some think that it is much too early to try to write a history of the Third Reich ...

There is much merit in this view. Most historians have waited fifty years or a hundred, or more, before attempting to write an account of a country, an empire, an era. But was this not principally because it took that long for the pertinent documents to come to light and furnish them with the authentic material they needed? And though perspective was gained, was not something lost because the authors necessarily lacked a personal acquaintance with the life and the atmosphere of the times and with the historical figures about which they wrote?' Shirer (*ibid.*)

'The question of AUTONOMY is often a central problem for a science: what are the grounds for distinguishing it from neighbouring disciplines? Is not linguistics really a branch of psychology or sociology or even human neurophysiology? The history of linguistics provides various answers to this: some that explicitly assign it to one of the neighbouring disciplines (e.g. for Chomsky it is a branch of cognitive psychology, for others it is a social science) ...' Lass/Wunderlich (*ibid.*)

Secondly, consider the following data from the Both Ways Test. Six subjects (Nos 3, 4, 6, 12, 15, and 16) rewrote sentence 8 as not + S, while they did not rewrite sentence 1 as not + S. For them why blocks putting not before the S. However, there is another group of six subjects (Nos 1, 5, 7, 9, 11, 13) for whom why does not block not + S.

Four subjects (Nos 1, 2, 3, 4) rewrote sentence 10 as not + S, but not sentence 5. Two of them (Nos 3 and 4) behaved similarly with respect to sentences 8 and 1 as well.

Five subjects (Nos 5, 7, 9, 11, and 16) used not + S regardless of the presence or absence of why in questions 10 and 5; four of them did the same on questions 8 and 1.

Three subjects (Nos 12, 13, 14) rewrote sentence 5 as not + S, although they did not rewrite sentence 10 as such. Similarly, subject No. 8 rewrote sentence 1 as not + S but failed to rewrite sentence 8 that way.

These results would point to the existence of some speakers who tend to not use why in not + S questions, and of others who tend to use not + S whether or not the question has why. If this is the case, the explanation of the existence of the two dialects might be something like this: Conducive negative questions expect a 'yes' answer. why questions cannot be answered by 'yes', therefore they cannot be conducive negative.

For some speakers, however, they apparently can be. Their dialect might tentatively be characterized as one where such questions are 'requests for evidence' (Kiparsky and Kiparsky 1970:169). Sentence (9) then

(9) Why is not linguistics really a branch of psychology?
would be paraphrasable as (10)

(10) Why do you think that linguistics is not really a branch of psychology? I think it is.
An alternative to the existence of two dialects might be this: when confronted with sentences 1 and 5 in the Both Ways Test, some subjects thought of a possible interpretation of the target sentences as requests for evidence, while others did not. Whatever the case may be, in as much as why is prevented from use with not + S, we have an argument for the conduciveness of not + S form questions.

Thirdly, it might be argued that not + S form questions are not produced by some sort of conducive rule, but by the operation of the heavier element principle (cf. Stockwell 1977:68), which would shift not to the pre-subject position if the S is a heavy one. Such an argument could be supported by the result of item 1 of the Negation Test as compared with item 5; but then, if the heavier element principle really worked here, we would expect item 8 to have received fewer S + not and more not + S answers than item 5, which has a much less heavy S. Such is not the case, in fact, not only has question 8 prompted as many not + S responses as question 5, but

it has more S + not responses than 5 does. Thus not + S form questions are not the result of the heavier element principle.

5. The existence of English questions of the form Operator + not + S + predication has been demonstrated. Some semantic, stylistic, and grammatical aspects of negative interrogatives have been examined by means of elicitation experiments, and it is proposed that not + S questions are uncontracted conducive questions. Much remains to be investigated and explained.

APPENDIX 1: Similarity Test

1. Subjects: 17 freshmen and sophomores of Indiana University. This was the same class as took, on an earlier occasion, the Acceptability and Style Tests.
2. Instructions: You will hear pairs of sentences. Estimate the degree of similarity in meaning between the members of each pair, using the three-point scale provided. Example:
 Two and two make four.
 Two and two equals four.
 These sentences are very similar in meaning, so they should be marked very similar by checking the column under the equal sign.

- Notes: (1) Subjects were given answer sheets which were marked 1. through 14. on the left-hand side, and =, ?, and $\neq$ horizontally at the top. The experimenter wrote the following legend on the blackboard:
- = very similar in meaning
 - $\neq$ very different in meaning
 - ? somewhere between
- (2) There was a five second interval between the members of each pair of sentences, and 10 seconds between the pairs (cf. Greenbaum and Quirk 1970:11). The odd-numbered test sentences (not given here for reasons of space) were used to distract subjects' attention from the real test items.
 - (3) Test sentences were pre-recorded and the test was administered by means of a cassette-recorder. The transcription here used is that of Crystal and Quirk (1964).

3. Results:			n = 17		
<u>Seq(quential)</u>	<u>no.</u>	<u>Test sentence</u>	=	?	≠
2		was /something not lóst# /wasn't something lóst#	11	2	4
4		/isn't it swéet# /is it not swéet#	10	4	3
6		/was not something lóst# was /something not lóst#	10	4	3
8		/didn't almost everybody gó# did /almost everybody not gó#	2	2	13
10		/wasn't she chosen by him# /was she not chosen by him#	10	4	3
12		/why did they nòt do it# /why didn't they do it#	15	2	0
14		/was not something lóst# /wasn't something lóst#	14	1	2

APPENDIX 2: Acceptability Test

1. Subjects: 17 freshmen and sophomores. Same group as took the Similarity Test.
2. Instructions: Evaluate the following sentences on the three-point scale provided.
 YES= Perfectly acceptable, I would use it.
 NO= Under no circumstances is it acceptable, I would never use it.
 ? = Somewhere between.
 You do not have to use all of the scale for each triplet. For instance, you can use three yeses if you think that all sentences in a given triplet are equally acceptable. You will have 30 seconds to evaluate 3 sentences. Your first reactions are solicited.

Notes: (1) Test sentences were presented by means of an overhead projector.
 (2) Seven triplets (not given here for reasons of space) were used to distract subjects' attention from what was being tested. The order of sentences within each triplet was randomized.

3. Results:

<u>Seq. no.</u>	<u>Test sentences</u>	n = 17		
		YES	?	NO
2	Wasn't something lost?	15	0	2
	Was not something lost?	4	6	7
	Was something not lost?	1	3	13
4	Isn't linguistics really a branch of psychology?	16	1	0
	Is not linguistics really a branch of psychology?	7	3	7
	Is linguistics not really a branch of psychology?	2	1	14
7	Didn't Robert go out before us?	15	1	1
	Did not Robert go out before us?	4	6	7
	Did Robert not go out before us?	3	4	10
9	Couldn't he have learned that?	13	2	2
	Could not he have learned that	2	4	11
	Could he not have learned that?	4	11	2
11 ²	Won't their cattle, their prop-			
	erty, and their beasts be ours?	12	4	0
	Will not their cattle, their prop-			
	erty, and their beasts be ours?	5	3	9
	Will their cattle, their property,			
	and their beasts not be ours?	2	7	8

	YES	?	NO	Non-compliance
Contraction	71	8	5	1
not + S	22	22	41	0
S + not	12	26	47	0

Figure 1

APPENDIX 3: Style Test

1. Subjects: The same as took the Acceptability Test.
2. Instructions: Evaluate the following sentences on the three-point scale provided.
 FROZEN style - a style for print and declamation
 BETWEEN frozen and colloquial
 COLLOQUIAL, informal style

² There was one instance of non-compliance or omission of answer.

- Notes: (1) There was a fifteen minute interval of class discussion of election strategies between the administration of the Acceptability and the Style Tests.
- (2) Test sentences were presented by means of an overhead projector.
- (3) Subjects were given only 20 seconds to evaluate a triplet as it was found that the 30-second interval used in the Acceptability Test was longer than needed.

3. Results:

n = 17

<u>Seq. no.</u>	<u>Test sentences</u>	<u>Frozen</u>	<u>Between</u>	<u>Colloquial</u>
2	Wasn't something lost?	8	1	8
	Was not something lost?	4	8	5
	Was something not lost?	5	8	4
4	Isn't linguistics really a branch of psychology?	6	0	11
	Is not linguistics really a branch of psychology?	8	5	4
	Is linguistics not really a branch of psychology?	4	12	1
7	Didn't Robert go out before us?	7	0	10
	Did not Robert go out before us?	11	4	2
	Did Robert not go out before us?	4	9	4
9	Couldn't he have learned that?	9	0	8
	Could not he have learned that?	6	4	7
	Could he not have learned that?	9	7	1
11	Won't their cattle, their property, and their beasts be ours?	7	1	9
	Will not their cattle, their property, and their beasts be ours?	12	1	4
	Will their cattle, their property, and their beasts not be ours?	4	7	6

	Frozen	Between	Colloquial
Contraction	37	2	46
not + S	41	22	22
S + not	26	43	16

Figure 2

APPENDIX 4: Negation Test

1. Subjects: 27 freshmen and sophomores. The same group as had taken the Uncontraction Test.
2. Instructions: Put the word not into the sentences and write them down. Example:
you will see: Red is blue.
you should write: Red is not blue.
Do not use contracted forms such as the one in Red isn't blue.

- Notes: (1) The test was administered by means of an overhead projector.
- (2) Sentences were not presented at timed intervals. The experimenter asked subjects to give first reactions. When most subjects looked up, the experimenter moved to the following sentence.
- (3) Ten affirmative sentences were interspersed in this battery in order to distract subjects' attention from what was tested.

3. Results:

		n = 27		
<u>Seq. no.</u>	<u>Test sentences</u>	<u>S+not</u>	<u>not+S</u>	<u>Non-compliance</u>
1	Is Steve here?	17	2	8
3	Were both of them injured?	13	8	6
5	Is David Bradbury, the math teacher, in the garden?	8	8	11
7	Is this what you said?	17	7	3
8	Is Stephen Ririe, the American architect from New York City, at the filling station?	12	8	7
10	Why should Johnny do it?	20	5	2
12	Did Evelyn send you?	13	10	4
14	Have John and Mary come yet?	14	10	3
16	Should the children be taught Greek?	18	6	3
18	Could he have learned that?	18	5	4
		<u>150</u>	<u>69</u>	<u>51</u>

- Notes: (1) In most instances of non-compliance testees wrote declarative sentences.
- (2) On No. 18, besides S + not (Could he not have learned that?) and not + S (Could not he have learned that?) six testees responded with Could he have not learned that? They were lumped together with the 12 instances of S + not.

APPENDIX 5: Uncontraction Test

1. Subjects: 35 freshmen and sophomores. The same group as took the Negation Test.
2. Instructions: Uncontract the following sentences.

Example:

Mary isn't running for the senate. →

Mary is not running for the senate.

Please write out your answers in full; do not leave out any words or shorten your answers in any way.

- Notes: (1) The test was administered using an overhead projector.
- (2) First reactions were solicited. Sentences were not presented at timed intervals; rather, subjects were given what the experimenter thought was just enough time to write answers.
- (3) Ten declarative sentences were intermingled with the test sentences to distract subjects' attention from the task.

3. Results:

Seq. no.	Test sentences	n = 35			
		S + not	not + S	Non-compliance	Contraction Omission
2	Wasn't Peter's dad upstairs?	3	24	6	2 0
4	Doesn't the methodology of comparative linguistics imply this?	4	20	9	2 0
6	Weren't the books badly damaged?	4	20	7	1 3
8	Isn't she your mother?	6	10	7	1 11
10	Hadn't Tom seen her at all?	4	8	2	0 21
12	Shouldn't John and Mary come a little earlier?	4	22	7	1 1
14	Wouldn't he have gotten home by now?	7	17	10	1 0
16	When couldn't Mike start his car?	16	15	2	0 2
18	Why shouldn't the president of such a large university as I.U. try to raise more money?	12	16	4	0 3
20	I am here, aren't I?	7	1	22	2 3
		67	153	76	10 44
		19.1%	43.7%	21.2%	2.8% 12.5%

- Notes: (1) The high omission rates on Nos 8 and 10, especially 10, might have been due to the experimenter not showing the sentences long enough.
- (2) On No. 20, the 22 cases of non-compliance were: are not I? (15), are I not? (4), are not you? (2), and am I? (1). This high non-compliance rate indirectly supports Jørgensen (1979), who speaks of 'indisputable preponderance of aren't I? in modern spoken English, almost to the exclusion of the alternative pattern(s).'
- (3) The high incidence of non-compliance (statements, contractions, omissions) is partly due to the aren't I? test and the mistake in the administration of No. 10.
- (4) One subject made 8 self-corrections, one 5, and one 3 toward the S + not form; whereas one subject made one self-correction in the opposite direction.

APPENDIX 6: Both Ways Test

1. Subjects: 25 freshmen and sophomores.
2. Instructions: According to some linguists, one should observe the distinction between norms of speech and writing, so that one remembers not to introduce contracted verbal forms or highly idiomatic expressions into academic essays. It appears that certain sentences (not all!) can be uncontracted in two ways. For example: Isn't good writing the highest type of language? can be uncontracted either Is good writing not the highest type of language? or Is not good writing the highest type of language? Uncontract the following sentences in as many ways as possible.

Notes: (1) An overhead projector was used to present test items.

(2) Test items were presented at 30 second intervals

3. <u>Results:</u> Subgroup A		n = 9		
<u>Seq. no.</u>	<u>Test sentences</u>	<u>S+not</u>	<u>not+S</u>	<u>Non-compliance</u>
1	Why isn't linguistics really a branch of psychology?	6	1	2
2	Don't you want to grow up big and strong?	6	0	3
3	Didn't he give a damn about her?	4	0	5

4	Don't I work my fingers to the bone for you?	4	0	5
5	Why didn't the Lord create the world in seven days?	3	2	4
6	Wasn't something lost?	2	3	4
7	Isn't Steve here?	4	1	4
8	Isn't linguistics really a branch of psychology?	4	2	3
9	Didn't he arrive until 5:00?	7	0	2
10	Didn't the Lord create the world in seven days?	3	3	3
		43	12	35

Notes: (1) Most cases of non-compliance were tag questions such as You want to grow up big and strong, don't you? and declarative sentences such as He didn't give a damn about her.

Subgroup B		n = 16		
Seq. no.	Test sentences	S+not	not+S	Non-compliance
1	Why isn't linguistics really a branch of psychology?	15	7	0
2	Don't you want to grow up big and strong?	16	1	2
3	Didn't he give a damn about her?	14	3	2
4	Don't I work my fingers to the bone for you?	16	1	1
5	Why didn't the Lord create the world in seven days?	12	8	1
6	Wasn't something lost?	8	14	0
7	Isn't Steve here?	15	6	1
8	Isn't linguistics really a branch of psychology?	8	12	0
9	Didn't he arrive until 5:00?	16	1	1
10	Didn't the Lord create the world in seven days?	11	9	0
		131	62	8

Notes: (1) Both Why is linguistics not really a branch of psychology? and Why is linguistics really not a branch of psychology? were grouped as S - not.

Subgroup A

<u>Seq. no. of</u> <u>testees</u>	<u>Seq. no. of test sentences</u> <u>S + not</u>	<u>not + S</u>	<u>Non-compliance</u>
17	1,8,10	-	2,3,4,5,6,7,9
18	1,2,3,4,5,6 7,9,10	8	-
19	1,2,7,8,9	5,6,10	3,4
20	2,3,4,9	1,5,6,7,8 10	-
21	-	-	1,2,3,4,5,6,7, 8,9,10
22	1,2,3,4,5,7,8,9	6,10	-
23	1,2,3,4,5,6,7,8, 9,10	-	-
24	9	-	1,2,3,4,5,6,7,8,10
25	1,2,9	-	3,4,5,6,7,8,10

Subgroup B

<u>Seq. no. of</u> <u>testees</u>	<u>Seq. no. of test sentences</u> <u>S + not</u>	<u>not + S</u>	<u>Non-compliance</u>
1	1,2,3,4,5,7,9	1,6,8,10	-
2	1,2,3,4,5,6,7, 8,9,10	3,6,7,10	2
3	1,2,3,4,5,9	6,7,8,10	2,3,4,7
4	1,2,4,7,8,9,10	6,8,10	3,5,9
5	1,2,3,4,5,7,9,10	1,5,6,7,8,10	-
6	1,2,3,4,5,6,7, 8,9,10	6,8	-
7	1,2,3,4,5,6,7,9	1,5,6,8,10	-
8	1,2,3,4,5,6,7, 8,9,10	1	-
9	1,2,3,4,5,7,9,10	1,2,3,4,5,6, 7,8,9,10	-
10	1,2,3,4,5,6,7, 8,9,10	6	-
11	2,3,4,7,9	1,5,6,7,8,10	-
12	1,2,3,4,5,7, 8,9,10	5,6,8	-
13	1,2,3,4,5,6,7, 8,9,10	1,5,6,8	-
14	1,2,4,6,7,8, 9,10	5,7	-
15	1,2,3,4,5,6,7, 9,10	6,8	-
16	1,2,3,4,7,9	3,5,6,8,10	-

ADDENDUM

In the discussion following my presentation William J. Sullivan (University of Florida) rightly pointed out that subjects will quite often read visually presented test sentences "in the wrong way", i.e. differently from the experimenter's intention. I cannot but agree with Earl M. Herrick (Texas A&I University) as well, who suggested that, in further elicitation experiments, greater attention be paid to "the formality of the discourse".

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IV

ECOLOGICAL LINGUISTICS

SOCIOLOGY OF LANGUAGE VERSUS SOCIOLINGUISTICS

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One of the most popular and actively cultivated branches of linguistics these days is the one called "sociolinguistics." There is now hardly a linguistics program at an American university or college that would not include among its course offerings one entitled "sociolinguistics." To a lesser extent this is true for academic institutions in England, Canada, West Germany. Large linguistics conferences at the national as well as the international level now usually include one or more sections devoted to sociolinguistics. There are a spate of textbooks bearing this word in their title, a Sociolinguistics Newsletter, and a few other journals by similar names. Yet at the same time, less well known and as yet only sparsely represented among academic course programs, there is something called "sociology of language," including some textbooks and one journal by that title. Sections devoted to the "sociology of language" have begun to appear at sociological conferences even though not at linguistic ones. One fairly recent book entitled Foundations of sociolinguistics, moreover, turns out to be dealing with what otherwise is known as "ethnolinguistics," or the field usually represented at anthropological meetings under the heading of "language and culture."

The main purpose of this paper is to trace briefly the development and current status of the similar-sounding and sometimes competing labels sociolinguistics vs. sociology of language, and the difference (if any) between the subject-matters thus labeled. In addition I want to raise however briefly the question of the difference between these and the subject-matter of "ethnolinguistics." While familiarity with the subject-matter of "linguistics," and with related controversies, can be taken for granted with the present audience, I will try to be a little more explicit about the nature of sociology, particularly in relation to the so-called sociology of language. I will conclude with a few recommendations concerning the latter.

I doubt that any professional linguist, or even "philologist," has ever questioned the social nature of language, i.e. the fact that specific human natural languages are shaped by and primarily used for social interaction. I also doubt that any professional sociologist has ever explicitly denied the importance of language in almost any kind of human social interaction. However, the question is how far linguists, in describing language systems and speech behavior, have given or are giving real attention

to the differential social settings in which language is used, to the correlations between various aspects of social behavior and the particular aspect called language behavior. Similarly, the question is how far sociologists--and for that matter social psychologists--have paid or are paying attention to the general and differential role of language structure and language behavior, as a determinant or indicator of social relationships.

The development of American linguistics between the two world wars had been proceeding on two rather separate tracks: on the one hand, Bloomfieldian structuralism concentrating on the analysis of differential lingual forms but staying aloof from semantics, and thus also from the analysis of social meaning; and on the other hand anthropological field work from Boas to Sapir and Whorf, relating language to culture, and thus to some extent at least to culturally differentiated settings of language use. Ethnolinguistics became a fashionable label for anthropological concerns with language in the 1940's.¹ George Trager, about 1949, proposed the term metalinguistics for relating language structure to sociocultural facts. In 1952 or a little earlier an American sociologist or social philosopher by the name of Haver C. Currie, in collaboration with his wife Eva, a speech specialist, formally proposed the term sociolinguistics for a new interdisciplinary endeavor that would study "the social significance of language in all respects".² Also in 1952, the sociologist Joyce O. Hertzler, in a paper before the Midwest Sociological Society, stressed the need for a "sociology of language", as a formal branch of sociology.³ Neither proposal made much of an impact at the time; but the notion of "sociolinguistics" as a new branch or border area of linguistics, parallel to "ethnolinguistics" and to what in the 1950's was becoming known as "psycholinguistics," did take root in the United States in the early 1960's. The Center for Applied Linguistics in Washington, and Charles Ferguson in particular, as well as the general political climate of the 1960's, had much to do with that. In 1963, the Social Science Research Council set up a Committee on Sociolinguistics, which proceeded to convene two conferences in the following year (at U C L A and Indiana University), one more in 1966 (on language problems of developing nations) and one in 1968 (on pidgin and creole languages), each of them eventuating in a volume of published papers. Also in 1963, while he was a member of this Committee on Sociolinguistics, Joshua A. Fishman, a social psychologist and sociologist by training rather than technically a linguist, decided to develop the area of what he soon preferred to call the "sociology of language", rather than "sociolinguistics" (or "macro" as against "micro" sociolinguistics, as the two overlapping fields also came to be known). Through much of the later 1960's and the 1970's, Fishman edited, co-authored and authored a number of volumes designed to serve as texts for graduate study in the sociology of language. At least two programs in this field have actually been set up so far, at

Yeshiva and Hebrew Universities.⁴

What was it that prompted Joshua Fishman to be increasingly dissatisfied with the label sociolinguistics for what he, sociologically trained and by upbringing concerned with the status of language minorities, was primarily interested in? It was that sociolinguistics as it shaped up under the early leadership of Uriel Weinreich, Charles Ferguson, Dell Hymes, and particularly William Labov, was clearly linguistics--so much so that Labov and Hymes, among others, expressed doubts about any need for the prefix socio-. This prefix, in the view of many or most who work in the field, is merely intended to correct a perceived imbalance or aberration within contemporary linguistics as such--particularly the position of Chomsky--led and other TG-grammarians, who would treat a language as something abstractly uniform, detached from social variables, etc. Looking back over the past fifteen years or so, the term sociolinguistics in this country has become heavily associated with the minute analysis of sociodialectal and stylistic variants (of English in most cases), based on the observation of individuals in small-group interactions. Correlations between variables of lingual behavior (including code-switching) and the sociocultural context all right,--but with the emphasis on the study of language, rather than on that of social structure. Sociolinguistics in this "micro" sense may be considered an elaboration and refinement of earlier dialectology--closely related to what some decades ago became known as ethnolinguistics, and to what Dell Hymes now proposes to call the ethnography of communication.

Then what about the sociology of language?--First let me dispose of the atrocious term macro-sociolinguistics as a synonym of sociology of language. If macro is to suggest dealing with larger units or going into less detail than in micro-analysis, I suppose no harm is done in occasionally distinguishing between macro- and micro- sociolinguistics--but we would still be talking about linguistics, a primary interest in the description of languages and language behavior per se. Whereas the label sociology of language, the term preferred by Fishman and some others, squarely puts the accent on sociology, dealing with languages and language behavior as subsidiary to, or in the service of, whatever sociology is about.

But what is sociology about? The Frenchman Auguste Comte, who founded and named this discipline about 1840, was reluctant to derive its subdivisions, seeing in it simply the overarching social science of the future, which would study the inter-relations between the major institutions of human society and the way entire societies develop and change. Later major figures in this field, particularly Herbert Spencer, Emile Durkheim, Max Weber, gradually came to circumscribe more concrete social institutions and processes, and to introduce a comparative perspective. The entry of sociology into the concert of academic disciplines is of relatively recent date, with the United States in the lead within the Western world. (In Communist countries,

sociology is almost synonymous with Marxism). A number of special sociologies have developed **alongside the** general theory, over the past forty years or so, such as the sociology of industry, of marriage and family, delinquency, education, politics, religion, art, knowledge, etc.--but no reference to a sociology of language can be found in the many texts I have consulted.

Two state-of-the-art surveys were published by American sociologists about the time that sociolinguistics was blossoming forth, c. 1965. The one, by Alex Inkeles,⁵ concluded that sociology had become a collection of subdisciplines dealing with institutions and social processes not (not yet) claimed by more specialized disciplines. Inkeles offered as a nutshell definition that sociology studies systems of social action and their interrelations; these systems ascend from single social acts to social relationships, organizations and institutions, communities and societies. While anthropologists usually study small self-contained groups, Inkeles added, sociologists focus on more large-scale and impersonal organizations. The other survey, by Paul H. Furley,⁶ culled some eighty definitions of sociology from standard works published between 1920 and 1965, about half of them in the United States, the rest in western Europe and Latin America. Furley boiled it all down by saying that sociology studies "the structure and functioning of society"; it differs from the other social sciences in that it seeks the broadest possible generalizations applicable to all or at least many areas of human association.

In most of a dozen or more introductory general sociology texts, of fairly recent vintage, that I myself have checked through, I have found barely any mention of the role of language in the functioning of society and its institutions. An exception are some texts close to the so-called Chicago school of "symbolic interactionism"; at the University of Chicago, earlier in this century, Cooley, Thomas, and specially George Herbert Mead had theorized in a general way about the importance of symbols, especially language, in the formation of the self and of social attitudes. But that is a far cry from a full empirical investigation of the role of languages in group formation, social control, etc.⁷

It is against this background that Joshua Fishman launched his project, in the 1960's, of developing a specialized sociology of language. In 1965, also, there appeared what purported to be the first systematic textbook in this new field, entitled A sociology of language, by Joyce Hertzler. Hertzler's book was reviewed very unfavorably by Fishman, as well as by Allen Grimshaw, another sociologist drawn into the interdisciplinary undertaking of the S S R C committee.⁸ Hertzler was taken to task for having ignored relevant recent contributions of linguistics, and for a rambling treatment that omitted many systematic links between social structure and language structure. Indeed, Hertzler's book contains relatively little, or only in unsystematic bits, of what Fishman and associates have been

working on and writing about over the past fifteen years; to wit: issues of multilingualism, language maintenance vs. language shift, language policy and language planning, language attitudes, language and nationalism, and the like. More generally, and looking toward future additional work in this field, Fishman has said that the sociology of language focuses on all topics related to the social organization of language behavior, including not only language usage but also attitudes and overt behaviors toward languages and their users. It wants to utilize (micro-) sociolinguistics, the ethnography of communication, and social science (including not only general sociology but social and comparative history, social geography, political science) to explain variation in societally patterned behaviors.⁹

What Fishman and associates have concentrated on so far, it seems to me, has been very much influenced by personal interest and practical-political considerations having to do with maintenance of ethnic ties and problems of language choice. Topics dealt with so far, as I have indicated, revolve around the status or selection of one language (or dialect) as against another in various social situations. What has to be developed more fully now, but on a comparative basis, is the role of language as such (not one language against another) at various levels of social organization and in socially conditioned personal living. (To some extent, it is true, this leads us into social psychology, a concern with the individual and his/her socialization. But it must also be part of sociology proper.)

Before I conclude this brief discussion, a few words must be said about developments outside the United States. In England, sociolinguistics (mostly in the micro sense), taking much of its lead from recent American work, can be said to be in full swing, as attested by a number of recent textbooks and readers originating there.¹⁰ At the same time, the sociology of language is represented by the British sociologist Basil Bernstein and his group, focusing on presumed social-class differences in language behavior, with educational implications. American sociolinguistics has also had a stimulating impact in France. A textbook recently published there, by Marcellesi and Gardin, tries to distinguish not only between the sociology of language and sociolinguistics, but to carve out within the latter an area labeled socio-differential linguistics, dealing with differential language behavior of social groups!¹¹ Special mention is due to the French linguist Marcel Cohen, who as early as 1956 published a volume surveying linguistic and sociological data toward what he called a sociologie du langage.¹² A good deal of sociolinguistic (as well as "linguosociological") discussion and research, stimulated both by Bernstein in England and by Labov etc. in the United States, has been going on in West Germany for a number of years. Some of it has been ably summarized by Norbert Dittmar, in a volume also recently translated from German into English.¹³ A very general introduction to the sociology of language, on a highly theoretical and

somewhat abstruse level, was attempted some years ago by Fritz Schütze, a sociologist at the University of Bielefeld.¹⁴ As far as the Soviet Union is concerned, a good selection and review of work done there has recently become available in English.¹⁵ The study of social dialects in that country goes back to the 1920's; so do discussions of language policy and planning. This is apart from the Marxist theorizing about the dependence of language structure on the socio-economic infrastructure, led by the linguist Marr through the 1930's and 1940's until its disavowal by Stalin. There has been a resurgence of empirical sociolinguistic work in the USSR in the 1960's, apparently stimulated in part by American developments. Soviet opinions on the advisability or feasibility of a separation between "sociolinguistics" and "linguistic sociology" are divided.

Is a distinction between "sociolinguistics" and "sociology of language" (or *linguo-sociology*?) indeed desirable? I think it is, with the understanding that there is a difference of emphasis, with a good deal of overlap--rather than any attempt at sharp separation. In the one case we are clearly dealing with a branch of linguistics, in the other case with a branch of sociology. Does that mean that linguists should not be interested in the sociology of language, and sociologists should not bother about sociolinguistics? Far from it; for an interest in border areas, and in interdisciplinary collaboration (as to substance or as to methodology) where it can be fruitful, is essential for any real scholar. As far as applied areas are concerned, we could probably expect "applied sociolinguistics" to lean toward problems of language teaching, attitudes toward languages and dialects as reflected in educational policies, etc.; whereas an "applied sociology of language" (or "lingual sociology"--but please not "linguistic sociology") would lean toward social welfare, social-psychological engineering, political organizing, and the like.

Increasingly, I believe, not only sociolinguistics but also ethno- and psycholinguistics should be plainly regarded as specialties within linguistics, rather than as "border areas" that are partly here and partly there or nowhere. Isn't it logically possible to conceive of the same subject matter, the same set of statements, as fitting both *within* the confines or context of one discipline as well as of another? Aren't disciplinary boundaries somewhat artificial in the first place?

Which brings me to a last point: Dell Hymes, in recent writings, has taken the position that "sociolinguistics" can embrace or is essentially the same as "ethnolinguistics". "Sociolinguistics", according to Hymes, is a term that links linguistics to anthropology; and what he baptized the "ethnography or speaking" in the 1960's is just a particular approach.¹⁶ The difference between socio- and ethnolinguistics, I believe, depends on the conceptual distinction between "society" and "culture"--a difficult if not futile business. The distinction between socio- and ethnolinguistics may be maintained on historical

grounds, as a bow to the way linguistics happened to develop. "Sociolinguistics" may then continue to connote primarily intra-societal subcultural analysis, with a special interest in dialectal and intralingual stylistic variants; whereas ethnolinguistics would retain a more crosscultural and perhaps even nonwestern-preliterate connotation. But personally, if I had to choose between the labels sociolinguistics and ethnolinguistics, I would, contrary to Dell Hymes, opt for the latter; for it is my bias that human societies function as a reflection of culture rather than the other way around.

NOTES AND REFERENCES

1. According to Dell Hymes (Foundations in sociolinguistics, Philadelphia: Univ. of Pennsylvania Press, 1974, p.84), such similar expressions as ethnographic philology, philological ethnology, along with linguistic anthropology and the like, can be traced to the middle of the 19th century.
2. Sociolinguistics Newsletter, v. 10 no.1 (Spring 1979): 15-19. Also cf. v. 10 no. 3 (Fall 1979): 36-37, the same journal.
3. Allen D. Grimshaw, "Sociolinguistics," in Advances in the sociology of language, I, ed. Joshua A. Fishman (The Hague: Mouton, 1971), p. 93. Joyce O. Hertzler: "Toward a sociology of language," Social Forces, 32 (1953): 109-19.
4. Advances in the sociology of language, I, pp. 7, 93-94. Joshua A. Fishman, "A graduate program in the sociology of language," in Advances in the study of societal multilingualism, ed. Joshua A. Fishman (The Hague: Mouton, 1978), pp. 795-98.
5. Alex Inkeles: What is sociology? An introduction to the discipline and profession, Englewood Cliffs: Prentice Hall 1964.
6. Paul H. Furfey: The scope and method of sociology: a meta-sociological treatise, New York: Cooper Square Publishers, 1965.
7. The sociologist DeGrange, who may have been influenced by Hertzler's paper of 1952, and who in 1953 published a sociology text that nontypically did include a chapter on "communication," exclaimed:

"It is curious that so evident a social necessity as language should have received so little formal attention from sociologists." He cited or quoted Bernard, another sociologist, as saying that "tomorrow we may expect the sociological analysis of language to become dominant; it may even become one of the major divisions of sociology." DeGrange went on to point out that Comte, the founder of sociology, had been quite centrally interested in communication, and had included in his treatise an evolutionary theory of language. (McQuilkin De Grange: The nature and elements of sociology, New York: Greenwood Press, 1953; here p.350.) - It would seem that twentieth-century sociologists, by and large, have neglected the discussion of language because its general importance is so evident that it can be taken for granted. The converse can be said of linguists aware of the social context of language behavior in general but overlooking differentiating features in such context.

8. Joshua A. Fishman, in Language, v.43 (1967): 586-604. Allen D. Grimshaw, in Harvard Educational Review, v. 37(1967), 302-08.
9. Cf. Fishman in Advances in the sociology of language, I (The Hague: Mouton, 1971), pp.9, 217,222; Language in sociocultural change (Stanford: Stanford University Press, 1972), p.272.
10. Cf. Roger T. Bell: Sociolinguistics; goals, approaches and problems, London: Batsford, 1976; R.A. Hudson: Sociolinguistics, Cambridge: Cambridge Univ. Press, 1980; Peter Trudgill: Sociolinguistics, Harmondsworth: Penguin, 1974; Pier Paolo Giglioli (ed.): Language and social context, Harmondsworth: Penguin, 1972; J.B. Pride and J. Holmes (eds.): Sociolinguistics, Harmondsworth Penguin, 1972.
11. Jean Baptiste Marcellesi & Bernard Gardin: Introduction à la sociolinguistique; la linguistique sociale, Paris: Larousse, 1974. Spanish translation, Madrid: Gredos, 1979.
12. Marcel Cohen: Pour une sociologie du langage, Paris: Albin Michel, 1956. Reissued, with only the briefest updating preface, under the title Matériaux pour une sociologie du langage, 2 vols., Paris: Maspero, 1971.
13. Norbert Dittmar: Soziolinguistik, Frankfurt: Athenaüm Fischer, 1973. Translated as Sociolinguistics, a critical survey of theory and application, London: Arnold, 1976.
14. Fritz Schütze: Sprache soziologisch gesehen, 2 vols., Munich: Fink, 1975. Cf. review by M.G. Clyne, in Language, v.54 (1978): 226-29.

15. Philip A. Luelsdorff (ed.): Soviet contributions to the sociology of language (The Hague: Mouton, 1977). Wolfgang Girke & Helmut Jachnow: Sowjetische soziolinguistik: Probleme und genese, Kronberg: Scriptor, 1974; as reviewed in English by Norbert Dittmar in Language in Society, v.4 (1975): 345-51, and by Bernard Comier in Language in Society, v.5 (1976): 242-43. L.P. Krysin: "Social linguistics in the USRR," Language in Society, v. 6 (1977): 229-46 (review article).
16. Dell Hymes: Foundations in sociolinguistics, an ethnographic approach, Philadelphia: Univ. of Pennsylvania Press, 1974. Also, his editorial statement in Language in Society, v.1(1972): 1-14.

ENGLISH AS A (NON-)SEXIST LANGUAGE

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0. Introduction

0.1 Preliminary remarks Much has been published, claiming to prove that English is a sexist language. Nowhere in the literature, however, can one find an empirical definition for determining the existence or degree of sexism in a language. Even in Ordoubadian 1979, otherwise an excellent article, the following statement occurs: "Undeniably, a measure of sexism exists in the English language ..." (Ordoubadian 1979:415). Sadly, this premiss remains not only unvalidated but even unquestioned. Most "proofs" of sexism in language, as Ordoubadian indicates, concentrate on what he calls lexical sexism, i.e. perceived imbalance in the inventory of lexical entries. He shows, correctly, that lexical sexism is not a valid indicator of sexism in contemporary society. At the same time, he introduces the concept of metaphoric sexism. He is undoubtedly correct in his conclusion that "lexically sexist tags ... (have) historical sources," but "metaphoric sexism in language ... (is) a better gauge of the attitudes of a society" (Ordoubadian 1979:420-21). What is wrong with his assertion is that neither lexical nor metaphoric sexism has anything to do with language structure. In fact, Ordoubadian's title, "Sexism and Language Structure," is inappropriate. And this is the crux of the matter.

To illustrate this point, let me resurrect the crusade of the American Structuralists against statements like "Bantu is a primitive language." Bernard Bloch and others inveighed against this type of characterization for years, and rightly so. There is no possible justification of such an assertion. Usage, metaphoric or otherwise, will not do as a proof of primitiveness. Gaps in the lexicon will not do. Bloch insisted that, for a language to be classed as primitive, it must be structurally primitive. Thus, if it could be shown that adult language requires three strata while child language requires only two strata and that the Tasaday language had only two strata, that might be used as part of a proof of Tasaday's primitiveness. The lack of a Tasaday vocabulary for transistor technology or nuclear warheads (lexical primitiveness) would be irrelevant. A preponderance of conversational topics aimed at food gathering (primitiveness in usage) combined with an animist view of nature (primitiveness in style) would be irrelevant. Calling airplanes "hollow silver birds" or the like (metaphorical primitiveness) would be irrelevant. Only primitiveness in structure can prove primitiveness in a language.

0.2 Structure and usage At this remove, it may be necessary to justify Bloch's practice of distinguishing between structure on the one hand and usage on the other. The claim has been made, often and publicly, that if sexist usages exist in English, then English is sexist.

This assertion is simply unacceptable, because it implies that no distinction can be made between usage and structure. By such reasoning, every primitive culture would have "primitive" usages, and hence, would be a primitive language, until the culture's arrival in the twentieth century. Worse, subcultures of American society which exist in, say, the Ozarks or Appalachia would be considered to have more primitive language than the mainstream society. Moreover, a husband and wife from the mainstream who go to a primitive subculture to live and work would be considered to go from a less to a more primitive language when they discuss matters concerning their new culture with each other. Of course, no one has ever seriously suggested the above about "primitiveness" in language. But it parallels what has been suggested about sexism: a primitive(sexist) usage implies a primitive(sexist) language. Moreover, the same language can be used to say sexist and anti-sexist things. Therefore, the same language is both sexist and anti-sexist. This is a logical paradox, an extreme and (logically) absurd consequence of the claim that usage and structure are non-distinguishable. Nor is there any a priori way in which limits can be placed on the consequences of such a claim. In general, Gleason (personal communication) is correct in saying that language is a tool of broad applicability. It can be used in a sexist fashion and an anti-sexist fashion, but that does not make the language itself sexist or anti-sexist. The structures exist and can be used, misused, and abused in a wide variety of ways; the one does not imply the other.

Next, claims of non-distinguishability between usage and structure are false. They imply that without the usage, the structure would not exist. But we do command structures which can decode and even encode usages and types of usages we have never heard before. Conversely, deleting some structures from a grammar might result in the loss of ability to handle at least some usages. Thus usage and structure are related but are not isomorphic, and they must be distinguished.

Given the distinction between structure and usage, then, which is the valid determiner of sexism in the language? Bloch's reasoning on language "primitiveness," as summarized above, is a convincing parallel here. I have not seen a single convincing counter-argument to applying his reasoning, appropriately modified, to the problem of sexism in language. I can only add that I welcome discussion on this topic as well.

0.3 The approach In sum, Bloch was opposing the common usage of "primitive language" to mean "language of a primitive people". Similarly, the usage "sexist language" meaning "language of a sexist people/society" is, or should be, just as unacceptable. But no structural or Structuralist critiques of the proofs of sexism in English have been published. Surely there are still some Structuralists around. The reasons for their silence are open to conjecture, but it might just be that the prevailing wisdom will not consent to hearing counter-arguments.¹ Whatever the reasons, many valid questions and (counter-)arguments remain unheard.

The most important unheard question simply asks what "sexist" is. I repeat: there is no empirical definition for determining the existence of sexism in the structure of a language. Therefore, I first formulate such a definition, give examples of its application, and use it to test a series of arguments "proving" the sexist nature of English. The arguments are shown to prove a lack of structural sexism in English, with a single exception. That exception is shown to fail by virtue of being based on false data. The inescapable conclusion, therefore, is that the English language is not sexist. I conclude with suggestions for the valid use of language and linguistic data as a barometer of sexism in a society.

I. An empirical approach to determining sexist structures

Formulating an empirical definition of the ways in which language sexism can be defined is not an easy task. Different linguists view linguistic structures in a wide variety of ways, ranging from Leonard Bloomfield's taxonomies through Noam Chomsky's rewrite rules or transformations to the system of purely logical relationships advocated by Louis Hjelmslev and Sydney Lamb. But different as the theories are, models in any of them must be statable in terms of explicit logical statements. Only two types of value judgements are applicable to logical statements: internal consistency and relevance to the real world. It does not seem possible that linguistic structures (or language in its internal structure) can in and of themselves be sexist. However, it would be premature to conclude that language cannot be structurally sexist. Let us first examine a similar problem.

The work of William Labov on Black English (BE--then called Non-standard Negro English) during the sixties has provided an influence on my thinking in this matter. Labov points out (personal communication) quite correctly that BE has its own internal (logical) structure, which resembles but is not identical to the structure of Standard American English (SAE). Given this, he objects to characterizations of BE as "mistake-laden" because this judgement is based on a comparison of BE usage with SAE structures. He claims that a "mistake" should be defined as an inconsistency between a particular utterance spoken by a BE speaker and the BE structures which were (or which should have been) used to encode it. The advantage of this definition is that a "mistake" in BE, SAE, or any other language or dialect would be determined in the same way: inconsistency between surface utterance and underlying structure. SAE structures cannot suffice to demonstrate BE errors any more than BE structures can suffice to demonstrate SAE errors.

Accepting the Labov approach in distinguishing between structure and usage in this way and ignoring the non-trivial problems of determining the actual internal structures of language provides some interesting possibilities for the definition of sexist structures. By analogy to Labov's approach, I conclude that internally consistent logical structures cannot in and of themselves be sexist. The only possible sexism that could arise from them is in their relation to the usages that result from them. Therefore:

DEFINITION: A linguistic structure is sexist if and only

if it *requires* a usage which, *unfairly* or *contrary* to the real-world facts, favors or excludes one sex.

The key to this definition is two-fold: there must be a *structural requirement*, and it must favor or exclude one sex *unfairly* or *counter-factually*. Both the requirement and the unfairness are necessary to any conclusion of sexism for the structure(s) under consideration. Either one alone does not suffice.

Consider the case in which the exclusion of one sex is required by the real-world situation. English basically has biological gender. That is, female humans always take the pronoun *she*: "my sister says she wants to come." The gender/sex isomorphism between *sister* and *she* justifies the usage. The male sex is excluded here, but there is nothing unfair or counterfactual involved. Sisters are all girls.

Conversely, a playwright might, for comic effect, substitute *he* for sister. This is certainly counterfactual, but cannot be considered as evidence of sexism in the language, because it is not required by the language.

This also means that a usage which reflects a social situation cannot be cited as evidence for sexism in the language. The language may be giving evidence for sexism in the society, as in our perception of doctors and dogs as male and of nurses and cats as female, but such usage alone proves nothing about sexism in language. Language structures do not require the usage, and it is not contrary to the observed facts. The combination of structural requirement and of counterfactual usage is necessary.

An example of sexist structure in a language known to me is found in the Polish pronominal system.² Polish has a system of grammatical gender in the third person pronoun: *on* 'masculine', *ona* 'feminine', and *ono* 'neuter'. Most male nouns are masculine and most female nouns are feminine, but there are exceptions to both generalizations. I do not consider the claim that gender systems are *prima facie* evidence of sexism. The genders could as well be labeled by number, as Ernst Pulgram has correctly pointed out. In any case, it is easily shown that the "masculine" is the morphologically unmarked singular category (Schenker 1964:15). This could be argued as proof of sexism, but whether the sexism concluded is anti-male or anti-female is basically a rhetorical choice. Schenker (personal communication) has also pointed out that the neuter is the syntactically unmarked category. Thus the system is complex and not open to easy characterizations. However, in the plural, there is a single dichotomy: *oni* 'masculine personal' vs. *one* 'other'. The former includes male humans only; the latter includes female humans, animals, inanimates, abstracts, etc. Here we have an arbitrary and obligatory favoring of one sex over the other which does not reflect any real-world situation. Thus, by the definition, the structures involved in the morphotactics of the Polish third-person pronoun are sexist. Similar structures are to be found in the verb past-tense conjugation and the numeral and plural nominal and adjectival declensions.

It is clear, then, that the definition excludes obviously non-sexist structures and identifies obviously sexist ones. Let us now apply it to a set of arguments concerning the sexist nature of the

English language. There have been a number of different types of grammatical arguments advanced, some syntactic and some morphological. I begin with the morphological.

II. Morphological arguments

II.1 Chairman Terms like *chairman* are said to be obnoxious because reference to a *chairman* excludes women. Of course, it is well known that there is a perfectly good etymological reason for *chairman*. Moreover, it can be demonstrated that the *man* in *chairman* is a different morpheme than the *man* meaning 'adult male human', an exercise I omit in the interests of brevity. Suffice it to say that they are formally distinct everywhere in the structure of English. The confusion between them is based on the spelling.

The importance of this observation is that the complaint about *chairman* is based on a graphological coincidence, not on linguistic analysis. While we can overlook such thinking in a [lɛjmq], we may rightfully expect better of professional linguists. Therefore, let us turn to some structural analysis and see what the definition has to say about *chairman*.

In addition to *chairman* we find *chairlady*, *chairperson*, *chairwoman*, and other, even less felicitous coinages. These clearly form a derivational set synchronically, and the morphotactic relations necessary to describe them are given in (1). Two logical relations are

- (1) chair(woman, person, man, lady)

present here. First, the relationship between *woman*, *person*, *man*, and *lady* is an unordered OR relation, defining the set of morphemes which can occur after *chair*. Second, the relation between *chair* and the set is an ordered AND relation. Nothing in these relations or their combination precludes the formation or understanding of *chairman*, *chairperson*, or anything else along that line that might be desired.³ Nothing in these relations requires that *chairman* be the most frequent in occurrence. This frequency is a question of usage, not of structure, though it might be argued to be partially structural only if *man* here is still a kind of *one*-pronoun distinct from *man* 'adult male human', and is the unmarked member of the opposition formed between it and the nominal members of the set. Otherwise, the frequency of *chairman* may reflect a real-world situation, but nothing in the structure of (1) affects or effects the frequency. It is purely arbitrary from the point of view of linguistic structure.

The structures involved in the formation of *chairman* are therefore completely non-sexist in nature.

II.2 Majorette Next is the majorette argument, summarized in the following quotation: "A majorette is an insignificant, female major."⁴ This statement, part of a "proof" of the sexist nature of English, is actually a portion of an etymological argument, buttressed with a large number of examples, which is fairly clever from a rhetorical point of view. It is a bad argument linguistically, as it mixes French and English morpho-semantics without regard for chronology, etymology, derivation, or linguistic integrity. That is, it pays no heed to whether we are dealing with French or English.

Presumably, the argument arises from a morphological analysis which assigns the meaning 'insignificant and female' to the suffix *ette* 'Et' in English. Of course, the argument fails. *Kitchenette* and *dinette* show that there is nothing inherently female in the morpheme. Moreover, though these two may be considered somehow diminutives, *majorette* cannot. A *majorette* is a baton-twirler, not a major at all. No more than a *martinet* is a small (?male) martin.

The majorette argument is, in other words, a non-argument.

II.3 Colors Lakoff (1975:8-9, fn. 5) claims that color names also constitute evidence for "woman's language" in English in two ways. Namely, she asserts that women know more color terms than men and that color names occur more frequently in the speech of women than of men. Her conclusion is that this shows that men "relegate to women" the right to discuss only insignificant things like decorating and colors. In the past few years, this assertion has been used as evidence that English is sexist.

A few comments on this argument are in order. First, the assertions are empirical, but Lakoff has not tested them. Until they are tested, we have every right to ignore them. Second, even if her two assertions concerning the number and frequency of occurrence of color names are shown to be true by test, such a test must take color vision ability into account. The vast majority of individuals with color vision defects are male. Unless these individuals are excluded from a test of the knowledge and use of color names, they would obviously skew the results in favor of those who have less problem with color vision defects, i.e. women, thus mistakenly validating the hypothesis. But more importantly, neither conclusion follows from the assertion.

To understand this last point, consider the colors from the viewpoint of the definition. Colors form a simple set and are related via an unordered OR relationship. Nothing in this relationship causes a higher number of members of the set for women or a smaller number for men. However many members of the set there are, nothing causes a higher or lower rate of usage of the individual members by men or by women. In other words, no sex-biased imbalance, real or imagined, can possibly result from this structure. The structure, therefore, is not sexist.

II.4 Personal pronouns. It has also been alleged that English is sexist because the masculine third-person pronoun is the unmarked. A glance at the paradigms presented in table 1 (following page) will show that there is no possible morphological justification for calling either the masculine or the feminine pronoun unmarked with respect to the other. Evidence from segmentation and syncretisms shows that the dichotomies plural vs. non-plural and animate vs. inanimate are justifiable. But masculine and feminine are equally marked with respect to the inanimate (neuter). One might make a minimal case in either direction, but nothing conclusive or even convincing can be shown.

II.5 Summary on morphological arguments Other "morphological" arguments have been advanced (see Eble ms. for a good survey). Most of them have been examples of "lexical" sexism⁶ or of usage. Other arguments have been superficially

clever but non-linguistic arguments only tangentially concerning language or language use, as in II.3. In no case has anything remotely resembling what is defined above as a sexist structure ever been shown. But there is still a possibility that syntactic proofs of grammatically sexist structures can be found. I turn to them now.

Pronoun ₃				
+		-		
Plural		Non-Plural		
P1		+ Animate		- Inan
		M	F	N
Nom	they	he	she	it
Obj	them	him	her	it
Gen ₁	their	his	her	its
Gen ₂	theirs	his	hers	its

Table 1

III. Syntactic arguments

III.1 Tag questions Lakoff (1975:14-17) claims that tag questions, the italicized portions of (2) and (3), are used more frequently by wo-

(2) He won't come, *will he?*

(3) He will come, *won't he?*

men than by men. At the same time, she admits of never having done a statistical survey to validate this claim. We would therefore again be justified in simply disregarding this empirical claim as another untested testable. However, even with test results, we should beware of any conclusions drawn. As Lakoff herself points out, tag questions are often used when you think you know the answer and only need confirmation; they are also used when you know the answer for sure and want to force or entrap someone into agreeing with you. Any test which does not consider the motivation of tag questions and their linguistic and social context is suspect.⁷

Whatever results emerge, however, make no difference. No structures exist here which might impel men (or women) to form (or not form) tag questions. As a "proof" of sexism in the structure of English, tag questions fail.

In connection with tag questions Lakoff (1975:17) also claims that women and not men may use a question intonation with a statement, as in

her (13 a,b), reproduced here. Lakoff is wrong. I have heard many

(13) (a) When will dinner be ready?

(b) Oh ... around six o'clock ... ?

men, myself among them, use this intonation in such an environment.

III.2 Generic *he* The pronoun replacement rules of English have been cited as examples of sexism in English. Before discussing this claim, it is necessary to review the data.

English has biological or natural gender which is human-centered. That is, any non-plural animate noun takes the pronoun of its sex. This is obligatory for humans, with the possible exception of only fetuses and infants. It is generally observed through non-obligatory for pets, somewhat less frequent for domestic animals, still less frequent for wild mammals, and unusual though still permissible for reptiles and arthropods. Where this rule is not observed for animates, inanimate *it* is used, as Jakobsonian markedness theory predicts from the description in table 1. There are a few indicators of grammatical gender for some speakers, or possibly some dialects. These include the use of *she* for countries, ships, cars, cats, etc., and the use of *he* for dogs and horses. Mathiot 1979 discovered a pattern of personification of inanimate objects in what she calls intimate conversational circumstances. But none of these exceptions is obligatory, and they can be ignored for present purposes, since they do not fulfill the "required" stipulation of the definition.

A more interesting situation is posed by common gender nouns and names which can refer to either males or females. Nouns like *cousin*, *orphan*, *parent*, *child*, and the like may be replaced by either *he* or *she*. There is no grammatical rule involved; the pronoun is appropriate to the sex of the individual involved. When somebody says "my cousin," they presumably know whether the cousin is a boy or a girl, and a subsequent pronominalization informs the listeners. These nouns are not sex-irrelevant, but they are unspecified for sex.

Similarly, there is a set of pronouns unspecified for sex which only refer to humans, e.g. *someone*, *anyone*, *everyone*, *who*, etc. However, since Duncan 1731, most school and prescriptive grammarians have been insisting that the masculine pronoun is required to fill the blank in (4). Sentence (4), by this rule, can be addressed to an all-male

(4) Everyone should bring _____ own pencil.

group, to a mixed group, or to an all-female group. This rule therefore requires the exclusion of women in favor of men, even if no men are present. Therefore, by the definition, the structures in English which implement this rule, call it the "generic *he*" rule, are sexist. Therefore, English is structurally sexist.

But in reality, no such rule is demonstrably a part of the structure of English. Consider, as linguists, the actual usage, instead of a grammar book. The data do not support a "generic *he*" rule. With an all-male group, (4) may take *his*. Similarly, with an all-female group, it may just as well take *her*. Moreover, in the case of a group of mixed or unknown composition, it can take *his* or *her*, though this is not usual.⁸ The normal usage in all cases replaces common gender nouns

and pronouns with the plural pronoun, as in sentences (5) through (8).

- (5) Everyone should bring their own pencil.
- (6) If anyone calls, tell them I'll be back at 4.
- (7) Somebody called.
Oh, yeah? What'd they want?
- (8) Where's a parent to take their child?

These are typical examples from a large data set, all gathered recently from spontaneous or prepared speech;⁹ (5) and (8) were produced by women, (6) and (7) by men. I do not represent this corpus as the result of a controlled survey, which still remains undone. Rather, the corpus results from simple observation. One TV journalist, for example, is the source of six tokens of pronoun replacement of five different common-gender nouns or pronouns in a (roughly) 90-second report. In four instances, he used *they*; in two instances, *he*. The noun *student* occurred once with *he* and once with *they*.¹⁰ However, in spite of the lack of statistical verification, the data clearly show that the "generic *he*" rule is not even observationally adequate.

Worse, the "generic *he*" rule is wrong. Thomas Pyles pointed out, in a 1969 article, that there are environments wherein the prescribed generic *he* would be ungrammatical. He suggests that we try "substituting the prescribed *him* for *them* in (9)" (Pyles 1979:202). Nor is the

- (9) Everyone cheered the returning hero, and he waved his hand to them.

usage in (9) restricted to American English. Pyles (1979:202) also cites a 1930 novel by C. S. Forester, in which sentence (10) appears.

- (10) Everyone ... fidgeted in their chairs.

(10) would also be ungrammatical with the prescribed singular pronoun.

Now (10) shows a usage that is at least three generations old, i.e. dating from Forester's acquisition of English. In fact, the usage in question is older than that. Pyles (1979:172) also cites (11) from

- (11) The true gentleman('s) ... great concern being to make every one at their ease and at home.

Cardinal Newman's *The Idea of a University*.¹¹ Pyles states that "this particular 'error' has been made by the most prominent authors since at least the sixteenth century."

Perhaps school grammarians have been prescribing the "generic *he*" rule simply because most speakers of English do not use it. Or, as Isačenko once remarked to me about Avanesov's pronouncing dictionary of Russian, "If Avanesov says not to say it a certain way, you can bet that at least 50% of the native speakers of Russian do say it that way." Prescriptive (school) grammars are part of a long tradition of opposition to linguistic change of any sort as being evidence of the degeneration of the language over time. As scientific observers, we should not be bound by their prejudices.

In sum, we must accept the usage represented in sentences (5) through (11) as the standard, and any occurrences of "generic *he*" as non-standard or even substandard. I would not object to calling them

evidence of brainwashing from school grammars, but I do not insist on it. They and the singular usages *she* and *he or she* (which I find in no way objectionable) constitute a much less numerous set of examples in my corpus. Certainly, they are not obligatory, even in formal situations.

At the same time, it may seem a little unusual, even troublesome, for a noun or pronoun to accept singular agreement in the verb but plural agreement in the third-person pronoun. In fact, however, this is not an aberrant usage. There is an entire class of nouns which take singular verb agreement but plural pronoun replacement, as in (12),

- (12) The committee is meeting today. They'll present their report tomorrow.

which is standard American usage. Nouns like *committee*, *Congress*, *family*, and the like all fall into this class, which is not a small one. These nouns are not common gender nouns, but they have patterns identical to those of common gender nouns in the area of number agreement, thus providing a structural parallel to them in this area of grammar.¹²

In contrast to the "generic *he*" rule, my description, call it the "plural-singular" rule, parallels a structurally justifiable description of English pronoun morphology,¹³ has an independently motivated structural application in the *committee* class, and accurately describes English usage.¹⁴

Finally, by the definition, the structures necessary to implement the "plural-singular" rule are not sexist.

III.3 Summary on syntax One generally invalid rule of the perhaps fictitious grammar-book dialect of English is demonstrably sexist. But this rule (dialect) does not represent the standard colloquial language. The standard colloquial language shows no evidence of sexism in the arguments cited. Lakoff (1975:14) admits that she knows of no syntactic rules possessed by one sex and not by the other. Assuming that the paucity of syntactic arguments correctly reflects a shortage of further syntactic indicators, we may conclude that no sexist structure exists in English syntax.

IV. Other levels of language

Though it has been suggested that women may use a wider range of intonations than men, no suggestion of sexist structures on other levels of language has ever been made. Nor do any arguments present themselves. Considering the efforts that have been made to adduce "proofs" of sexism in English, the lack of any such arguments on phonological or semological strata is probably indicative of their non-existence. Should any such arguments be suggested, the empirical definition is now available as a mechanism for testing them. I welcome its application.

V. Conclusions

V.1 Structural sexism in English I have formulated an empirical definition for determining the existence of sexism in the structure of a language.¹⁵ The definition was applied to the morphological and syntactic data involved in se-

veral types of "proofs" that English is a sexist language. One of these "proofs," the one involving the "generic *he*" rule, would have been a valid proof of sexism, according to the definition. But it was shown that the "generic *he*" rule is not a rule of standard colloquial English, but only of a putative grammar book dialect. The real data in this case result in a rule which the definition shows to be structurally non-sexist.

Considering that we are dealing with the English language, it seems only appropriate to apply a principle of Anglo-Saxon law here, i.e. the accused is innocent until proven guilty. English is thus exonerated from the charge of sexism.

V.2 Language and sexism Finally, given a society which is suspected of sexism, consider how evidence for it may be deduced from the language which is the means of social intercourse for that society, even if the language itself is non-sexist. I suggest that language use provides the evidence for sexism in the society, and I suggest further that Ordoubadian 1979 is right. Lexical sexism is only fossil evidence of interest to linguistic archaeologists and does not indicate current attitudes. Current attitudes must be sought in metaphorical usage. So if you would hunt sexism in American society via English, read Ordoubadian 1979 for the foundation and Mathiot 1979 for a detailed study, approach the problem as a function of all relevant sociological perspectives, and prepare for detailed statistical correlations on data representing a great deal of exacting field work.¹⁶

I wish you luck.

NOTES

¹ In fact, an earlier version of the present article was sent to several journals between 1973 and 1976 and has a clean record: four for four (rejections, that is). Once again, LACUS provides the only Forum. And, as it turns out, the only reasoned discussion. I wish to thank, in alphabetical order, all those who contributed to the discussion: Charles Ruhl, Peter Reich, Ernst Pulgram, J. Peter Maher, H. A. Gleason, Jr., Connie Eble, and Michael Cummings. Whether they agree with my conclusions or not, I respect their opinions and appreciate their suggestions.

² I include this positive example of the application of the definition to language structure at the suggestion of Connie Eble.

³ In fact, we now have *chairfrog*, in contradistinction to *chairperson*, as a result of the Muppet Kermit's being named head of this year's UNICEF Day Drive.

⁴ I refuse to identify the speaker, as the argument and its conclusions are embarrassingly naive and linguistically inept. But he is a professional linguist who has published articles indicting English as a sexist language. In his own area, his work is much better.

⁵ Lakoff 1975 does not claim to be dealing with evidence of structural sexism, though she is not always careful to distinguish structure from usage, and she does imply that there are sexist structures

in English (Lakoff 1975:43, fn. 4). But this does not excuse those linguists who cite her monograph as proving that English is sexist. Again, I refuse to identify herein the sources of such citations. The linguists in question, both male and female, include many friends, and I have no wish to hold them up to ridicule.

⁶For example, *herstory*, which Lakoff demolishes.

⁷My own experience includes only two habitual users of tag questions, one of each sex.

⁸I suspect my own reluctance to use *his or her*, which is both apt and unobjectionable, stems mainly from the consistent opposition to it displayed by my English teachers. This opposition had a stronger effect than it might otherwise have had because this usage is equivalent to but different from the norm, for which continue below.

⁹The (5) type has also been heard with *your* and pause after *every-one*. I would analyze the grammatical relations of this sentence differently, but the point is that *your*, like *their*, is common gender.

¹⁰This example assumes somewhat greater significance coincidentally. It was omitted from my oral presentation. At the close of the talk, Charles Ruhl complained of an uneasiness at using a plural pronoun replacement of *the student*. Since *his or her* is also available and acceptable here but was apparently not considered, I would suspect that Ruhl's reluctance results from the insistence of grammar school English teachers.

¹¹Note that this usage shows that not only *everyone* but even the numeral *one* is not necessarily singular.

¹²N. B. I cite this only as an example of a structural parallel; it is not a structural justification of my description.

¹³It does require a change in the marking labels of table 1. That is, "plural" should be labeled "plural or common gender".

¹⁴Perhaps I should point out that the "generic *he*" rule is not a totally arbitrary choice. It reflects a particular analysis of the meaning of third-person singular pronouns: *it* is inanimate, *he* is animate, *she* is animate and feminine. *Everyone* is animate, but not necessarily feminine, so *he* constitutes the closest match. The only problem with this analysis of the third-person pronouns is that it is not morphologically justifiable, as I show in II.4. Thus it should not be surprising that the "generic *he*" rule, which parallels this analysis, is also a violation of English structure.

¹⁵It could also be used as an indicator of degree: a language with five sexist structures might be called more sexist than one with two sexist structures. But this is a point I will not pursue.

¹⁶Mathiot 1979 is an excellent study containing much information about usages, cross-referenced as to different social parameters, but her conclusions do not always follow from the data she presents.

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LINGUISTICS AND MACHINE TRANSLATION

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The first general purpose electronic digital computers were built in the late 1940's, and almost immediately there developed an interest in trying to program computers to translate, especially from Russian to English.

Since the late 1940's machine translation has followed a roller coaster path. There was a high point of enthusiasm and optimism in the 1950's and early 1960's. Then there was a steep and frightening descent in funding and optimism about 1965. The field coasted along low until the early 1970's but is now climbing again. It is hard to see where we are headed in the 1980's, but the author has a suggestion--more involvement of linguists. Linguists have been in machine translation but primarily as consultants or clerical helpers to enter data in previously designated slots.

What is needed in machine translation is more linguists who propose models of translation and know enough about computers to suggest how the models can be programmed. Eldon Lytle is one such linguist but many more are needed. Perhaps linguists can help find a path for machine translation which will be smoother than the one followed to date.

OUTLINE OF THIS PAPER

This paper has as its aim to convince a few linguists and translators that there is something of linguistic interest in machine translation. It will pose several preliminary questions which should be addressed when working on machine translation. Then it will review some attitudes that have evolved in the history of machine translation. Finally, it will discuss a few of the linguistic problems in machine translation and invite solutions from the linguistic community.

PRELIMINARY QUESTIONS

At least the following five questions should be considered before working seriously in machine translation.

Question one: Is there an essential difference between humans and machines? This may not seem to be an issue to some because the answer is so obvious. The trouble is that to some

there is obviously an essential difference and to some there is obviously not. The author assumes that most linguists and translators, being basically humanists, believe humans and machines to be basically different and that computers cannot think and will never do so. The following two quotations from respected scientists reveal a strongly opposing viewpoint.

George Miller, a psychologist, has written:

"Many psychologists have come to take for granted in recent years. . . that men and computers are merely two different species of a more abstract genus called 'information processing systems.' The concepts that describe abstract information processing systems must, perforce, describe any particular examples of such systems."¹

Simon and Newel, researchers in Artificial Intelligence, claimed over thirty years ago:

"There are now in the world machines that think, that learn and that create. Moreover, their ability to do these things is going to increase rapidly until-- in the visible future--the range of problems they can handle will be coextensive with the range to which the human mind has been applied."²

This issue is discussed in some detail in Computer Power and Human Reason by Joseph Weizenbaum.³ The relevance of this issue to machine translation will be seen in question three.

Question two: What is translation? Translation is a very broad term. It involves a source language document and a target language document which correspond in some way. But translation may be technical or literary. It may retain the source culture or yield to target culture. The territory covered by movement between extremes on all these axes is so broad that one suspects that machines adapt more easily to certain areas of the terrain than others. Indeed, machines have shown themselves quite useful in some formal, technical translation, but have not even ventured into the province of creative literary translation.

Question three: Is translation an essentially human activity? Obviously, one answers this question with two questions--namely questions one and two. Whether translation is essentially human depends on what kind of translation is involved and whether humans and machines are essentially different. If translation is restricted to weather forecasts then translation is not essentially human because the METEO system does quite a decent job of translating Canadian weather forecasts every day. If, on the other hand, translation is expanded to include the

best of literary translation and there is any essential difference between people and machines, then translation is essentially a human activity.

Question four: Why should a linguist be interested in machine translation? If the human mind is fundamentally different from a machine, and if language is a distinctive aspect of the human mind, then we will never be able to write down adequate models of human languages. For any well-defined model can be programmed on a computer. Nevertheless, it is an extremely beneficial exercise to write down models of language. Models can provide insights and be useful even if imperfect. Machine translation provides a very effective means of testing linguistic models, and machine translation systems can be very useful even if they are based on imperfect models.

Question five: How do you know if you have succeeded in machine translation? It is not fair or productive to require that a machine translation system--to be successful--must be able to translate any document and to translate it so well that all human judges grade it as flawless. Even human translators cannot pass that test. Perhaps, a machine translation system could be given a perfect score on a particular document if its translation, when randomly inserted into a pile of human translations of the same document--receives a rating exceeding the mean of the scores for all the translations. This method would still produce different verdicts with different raters. The basic problem is that there is no well-defined repeatable procedure for evaluating the quality of a translation. This may well be unavoidable because translation quality may well be unmeasurable. This situation is not a common one for problems to be solved in a computer. Most computer programs perform well-defined computations such as producing your bank statement or your telephone bill. The difficulty of evaluating the success of machine translation can perhaps be understood through the following fantasy. Suppose you are building an adding machine, but there is no well-defined procedure for obtaining the sum of two numbers. So you ask for examples of correct addition so you can work out a procedure yourself. Alas, the sponsors of your project disagree on how to evaluate the quality of addition. They generally agree that three plus four is seven, but there is serious disagreement when it comes to twenty-nine plus forty-three. Some say the answer is sixty-two (the "no-context" approach). Others claim 1001000 to be the formal binary answer. Others say that seventy is the answer which expresses the general idea of the addition without getting lost in the details.

Many competent people have proposed insightful translation quality metrics but, to the author's knowledge, none is objective, repeatable and generally accepted. It is not at all clear that any ever will be.

Now where do all these questions lead us? The author assumes that most linguists will agree in general with the following reply. Humans are essentially different from machines and any kind of translation which is challenging and creative is an aspect of human activity which will never be achieved by machines. However, machine translation may well be an interesting means to test models of translation so long as one remembers the limitations of machines and the subjective nature of translation quality evaluation. This reply should be kept in mind as we discuss the evolution of attitudes among workers in machine translation.

HISTORY OF MACHINE TRANSLATION

In the 1950's work in machine translation was done primarily by people who were not linguists. An influential and typical attitude was that of Warren Weaver, Director of the Natural Sciences Division of the Rockefeller Foundation. In 1948-1949, Weaver circulated a personal memorandum calling for research in machine translation. He admitted that a word for word translation is not adequate, but presented as obvious the claim that a translation system which considered two or three words on either side of the word in question would surely be able to produce a correct translation. He was implicitly assuming that machine translation is a well-defined mechanical activity. The belief of early workers has been described as follows:

"That high quality translations could be produced by machines supplied with sufficiently detailed syntactic rules, a large dictionary, and sufficient speed to examine the context of ambiguous words for a few words in each direction."⁴

But the illusion did not endure. One of the prominent workers in machine translation of the 1950's and a dissenting voice in the 1960's was Bar-Hillel.

Bar-Hillel coined an acronym which is still used--FAHQT (Fully Automatic High Quality Translation). Bar-Hillel claimed that FAHQT was impossible.⁵ He claimed that machines would never be programmed to produce high quality translations unless the machine had a model of the real word as part of its program.

For example, consider the sentence "The ball was in the pen." The word "pen" would certainly have several translations into most languages. In particular, the sense "animal enclosure" would translate differently from the sense "writing instrument." However, there may be nothing in the immediate context of "pen" to indicate which translation would be appropriate.

Bar-Hillel argued that a machine-translation system would have to know something about the real world and in some way

"understand" language to translate certain sentences correctly. This conclusion should not be very startling to a linguist or a translator. Semantics and pragmatics are well-recognized areas of linguistics, and every translator knows the importance of understanding what he or she is translating.

So Bar-Hillel's conclusion itself is not very interesting. It is interesting, however, to examine the reactions to his conclusion. Some discounted the importance of his observations. They claimed that if one specifies the subject matter of the text, the proper translation can usually be decided without regard to context and the few remaining errors are insignificant.

Others accepted Bar-Hillel's conclusion and took an all or nothing approach. They decided if FAHQT was impossible then machine-translation was of absolutely no interest.

These two reactions look at the same data in different ways. Take, for example, an ordinary typewriter. It will have keys for the alphabet, the digits, and a few punctuation marks. Now suppose the typewriter has parentheses but no square bracket. One attitude would discount the importance of the problem and use parentheses instead of brackets or write in the brackets by hand. The opposing attitude would claim the typewriter is useless and that hand printing is better since one can use any special symbol that can be drawn. Who is right?

This brings us to about 1965, when the National Science Foundation requested a report on the status of machine translation.⁶ This booklet, called the ALPAC report, was printed with an appropriate black cover because it immediately became the funeral announcement for significant funding of machine translation in the United States. The report was concerned mainly with the translation of Russian scientific articles into English by government agencies. The report claimed that there was at that time no shortage of human translators to do the work and that experiments in machine translation to that date had not produced fully automatic high quality translation. The conclusion of the report was as follows:

"The committee believes that it is wise to press forward undaunted, in the name of science, but that the motive for doing so cannot sensibly be any foreseeable improvement in practical translation. Perhaps our attitude might be different if there were some pressing need for machine translation, but we find none." (ALPAC: p. 24)

The report recommended that several centers be funded to investigate the basic problems of machine translation, but the attitude taken by most people was that since machine-translation has not been totally successful to date, machine translation was

a total failure and of no interest to anyone. The ALPAC recommendation to continue basic research was generally ignored.

Since 1966, machine translation has been a "dirty word" in many circles and funding has been scarce.

Since the ALPAC report, there have been three new approaches to machine translation that have developed. None of them ignores the problems of machine translation and none is inclined to abandon the effort because FAHQT has not yet been achieved.

The first new approach is the Artificial Intelligence Approach. Several workers in Artificial Intelligence have re-examined Bar-Hillel's argument that the resolution of certain ambiguities would require knowledge of properties of the real world. Bar-Hillel considered that the argument was closed because real-world knowledge in a computer was obviously impossible. Artificial Intelligence workers took that assumption as a challenge and began working on representing real world knowledge in computers. To date they have produced some very interesting results when restricted to micro worlds which do not have very much knowledge that needs representation. The relationship between linguistics and Artificial Intelligence could be the topic of another paper.

The second new approach to machine-translation is to restrict the subject matter to a well-defined sub-language and to design a system specifically for that sub-language. This is the approach of the TAUM project at the University of Montreal. These METEO systems are currently being used daily by the Canadian Government to translate weather forecasts from English to French. The following example from the output of the METEO system shows that it produces more than a word for word translation:

"Wind warning ended both regions"

"Fin de l'avis de vent pour les deux régions"

The TAUM project is now working a more ambitious "AVIATION" project.

Both the Artificial Intelligence approach and the sub-language approach currently require highly restricted source text in order to obtain high quality translations. Even with input restricted to weather forecasts, the METEO system rejects about 20% of the sentences presented to it. But suppose that translation of rather general text is needed. Then neither the Artificial Intelligence approach nor the sub-language approach is currently useful. A "first-generation" system such as those in the 1950's can handle a large vocabulary, but the translation produced for general text is generally considered to be too poor to be worth human post-editing. The third approach is to

request human intervention during the actual translation process. The computer interacts with a human by means of a video display and a keyboard.

This interactive approach promises to produce translations of rather general text which are good enough to be worth post-editing. The Brigham Young University ITS project is an example of this approach.⁸ The success of the interactive approach depends on how well the computer can select which questions to ask and how much good having the answers does in improving the translation. At one extreme, an interactive system could ask for the translation of every phrase. Then, of course, there is no savings. If, on the other hand, it asks a few pertinent questions which require the human's knowledge of the real world to answer, there may be a considerable savings. The average throughput of a human translator using manual techniques is about 20 minutes per 100 words. The average rate of post-editing a translation which is already reasonably good is about 6 minutes per 100 words. If the quality of the translation being post-edited is very low, then post-editing often does not bring it up to acceptable quality; it just rearranges problems.

Thus the interactive will probably be most useful in applications where the output of an automatic system is too poor to post-edit but where the investment of under 10 minutes of human interaction per 100 words is sufficient to raise the quality of the output to acceptable levels for post-editing. The ITS project has achieved this when the overhead of analysis is shared by five languages but not in a one-to-one environment.

The current status of attitudes toward machine-translation can be summarized by a series of acronyms presented by Martin Kay⁹ as follows: HTLGI→MAHT→HAMT→FAHQT. The right-most acronym is Bar-Hillel's ultimate acronym (Fully Automatic High Quality Translation). The left-most represents the other extreme (Human Translation Like God Intended). The middle-ground includes MAHT (Machine-Assisted Human Translation) such as word processing and computerized dictionaries and terminology banks, and HAMT (Human-Assisted Machine Translation) such as systems we have discussed that use human aid for interaction during translation and/or post-editing.

SOME LINGUISTIC PROBLEMS IN MACHINE TRANSLATION

What are the properties of language that make it so difficult for machines to translate? A full discussion of these problems would require several papers. In this paper we will examine just a few.

(a) Anaphora

If the target language has several forms of "it" inflected according to the lexical gender of the anaphoric reference (e.g. French and German), then a computer program must determine what word "it" refers to in order to select the proper form. To understand this problem better, select an English text at random and develop a step by step procedure for determining what a pronoun refers to without reference to anything so vague as "meaning." Everything must be in terms of words and their dictionary properties and explicit rules about English.

(b) Modification

Languages often have forms of relative pronouns that agree with their antecedent as to animacy. Consider the following phrase: "The man with the beard that..." Does "that" refer to "man" or "beard"? The rest of the sentence will probably provide the answer to a human, but consider the problem of designing a general procedure for mechanically determining the answer.

Sometimes the ambiguity is even deeper than between two possible antecedents. In the following Junction Grammar classic sentence, the ambiguity is between a relative and a complement: "The fact that he knew surprised them."

(c) Word Order

Early efforts in machine translation assumed that it was sufficient to retain the word order of the source text with minor adjustments. This approach is obviously inadequate to a linguist or translator. The ITS project has attempted a more sophisticated approach which involves computing the target language word order from the relationships in a Junction Tree. Consider the following simple French sentence and its English translation:

(1) Mes professeurs ne me connaissent même pas.

(my) (professors) (not) (me) (know) (even) (not)

(2) My professors do not even know me.

Clearly, a word for word approach will not produce an adequate translation of even simple sentences.

(d) Idioms

Idioms are instances where a word for word translation breaks down by definition--unless the source and target languages share the same idiom. If a certain sequence of words is always translated in a particular idiomatic way, then a computer can easily be programmed to do so. A problem arises when an idiom can take

several forms. Consider, for example, the following French sentence and its English translation:

(1) Nous sommes obligés d'assister aux cours.

(we) (are) (obliged) (to attend) (to the) (classes)

(2) We have to attend classes.

The idiom "être obligé (e)(s) d'assister à" may be translated "have to attend," but there are many possible forms of the idiom depending on number, gender and tense. It is also possible to place an adverb inside the idiom ("nous sommes souvent obligés"). This simple example shows why a machine translation system must identify the base form and category of words in order to capture generalities. The problem of idioms becomes even worse when the same string of words may be idiomatic or literal, depending on the larger context. Consider, for example, the sentence: "He kicked the bucket." The context would make it easy to decide whether he vented his anger or whether he passed away. But how is the computer to know when it comes upon a new sentence with that string of words. The question of idioms is very important in translation. Consider what would come out if a machine translation did not recognize the threat of financial ruin in the following sentence:

"I'll break you for this!"

(e) Word Selection

Even after idiomatic phrases are identified, the problem of translating the remaining words is far from trivial. Consider the following sentences:

(1) "The bull ran its horns into the pumpkin."

(2) "Seeing the wave come, they ran into the trees."

(3) "He ran the organization in the past."

It is easy for a human translator to distinguish the various uses of "run" in these sentences and translate them appropriately. Consider the problem of writing a computer program which can make appropriate word selections in contexts other than the specific ones it is expecting.

What is needed in machine translation today? The greatest need is not for bigger and faster computers. The need is not for long lists of specific solutions to specific problems in specific sentences--solutions that will surely get tangled up with other specific solutions. The need is not for people to point out that there are permanent limits on machine translation based on the

differences between humans and machines (workers in machine translation now either accept those limits or will never accept them). The need in machine translation is for linguists and translators who want to extend our understanding of human translation by creating models of translation which deal with all aspects of translation that can be described systematically. The need is for models that go beyond the substantial basis that has been laid in syntactic and semantic models to deal even better with the resolution of ambiguity of anaphoric reference and modification, the finer elements of determining word order, the identification of idioms in different cases, and the selection of appropriate translations for individual words when the choice is not obvious from the syntactic function of the words and from their immediate lexical environment.

How much can we explicitly know about translation?--Perhaps less than we hope to but certainly more than we do now.

FOOTNOTES

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THE MANY DIMENSIONS OF CONVERSATIONAL LANGUAGE

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1. The dimension of language artifact and its limitations.

In discussing various aspects of language, linguists are accustomed to using terms like 'level' and 'structure' sometimes rather loosely. For example, 'level' has been used at various times to distinguish between phonology and grammar. It has also been applied to distinctions within grammar, such as 'deep' and 'surface'. 'Structure' is perhaps even more threadworn as a linguistic term. In fact, an entire movement in the field has been designated as 'structuralist' by linguists who, if we extend the term to its most general sense, could also be included under the same label. After all, transformations do nothing more than convert one structure into another. Transformational linguists are latter-day structuralists, regardless of the level of syntax, semantics or phonology on which they operate. Any linguist who looks at language as patterned speech emanating from some implicit but recoverable set of rules is operating within structuralist bounds. For this reason, I would also include all tagmemicists and stratificationalists as structural linguists. The only departure from a structural view of language would be one in which the focus of attention is moved away from discovering recurrent forms and uses in language.

Mindful of the problem with terminology, it is not the intention of the author of this paper to make a substantive break with structuralist tradition. Rather, my purpose is to underline the need to investigate new areas of structured linguistic behavior beyond that of grammatical form. This need is generated by observing the diverse corpora of patterned language-related behavior which derive from conversations. The data observed so far have led me to postulate three distinct dimensions of conversational language, each operating within its own constraints and with its particular properties. One of these dimensions is that of grammar and all aspects of language form. This dimension I call the dimension of language artifact. It is the one with which all linguists are most familiar. It embraces the contemporary interest of many linguists to uncover the ways in which pragmatics contributes to the generation of language form. By itself, however, this dimension cannot incorporate the subject matter dealing with the tactics of speech and the enacting of roles. In my view, a dimension of transaction must be recognized in order to deal with verbal tactics and the strategies which produce them. A third dimension, that of interaction, is reserved for

studying the ways in which language is used in the casting of roles.

The following hypothetical but plausible conversation between two persons illustrates the three dimensions postulated above:

A: Did you get it?

B: Yes, I did.

A: I guess I owe you one.

B: I'll see you at Joe's, tonight.

Such a conversation would be understandable to someone with a knowledge of English only in terms of individual sentences, unless that person had information about the circumstances under which the conversation took place. As we go through our daily activities as communicationally functional human beings, we not only overhear many conversations such as the above, but we also engage in verbal exchanges which are equally cryptic to others. The term 'grammatical competence' cannot stretch beyond one's ability to recognize the forms of a language and anticipate the semantic features which may be attached to them--in addition, of course, to being able to generate such forms. But speakers have other competences as well. For one, they can engage in conversations such as our sample and recover not only information of a factual nature from them but also of a social and psychological value. In extending the analysis of the sample conversation beyond its artifactual content, we can begin to conjecture about the amount and kind of information shared by the interlocutors beforehand. For example, the *it* referred to by the first speaker could have as its antecedent a fish and the reference could be to a bet made by the two interlocutors as to the catching of it. B answers that he did, indeed, catch it (a fish) which, in turn, triggers A's remark that he 'owes' him (that is, B) one (a drink, perhaps?). B will collect at the bar later in the day (Joe's place?). Once we conjecture or 'fill in' a context, the seemingly disjointed sentences of the conversation become meaningful and coherent. There are other possible interpretations to the facts behind the conversation (the 'it' could be a new car and A, a mechanic who promised A a free grease-job at Joe's garage, for example). Whatever the case, a number of linguists and linguistically-oriented philosophers (such as Grice, Searle and Austin) have delved into how context motivates the form taken by sentences in utterances.

2. The transactional dimension. If we could cover all that there is to cover in conversational language by extending the pragmatic models now being developed, we would not have to talk about any other dimension of language use. However, it becomes clear that the social transactions in which people engage verbally do not always take the same form. As a result, pragmatic explanations are one-directional, from context to form and not the other way around. The same informational content of the sample conversation could have been delivered in a number of different ways, including the following:

- A: Well, how did you make out?
B: I got one.
A: I suppose you will want to collect, now.
B: Right, pal. Tonight, at Joe's.

The transactional differences between the second and the first version of the conversation could be made even greater, depending on the intonation and other vocal qualifiers used. What are the factors which motivate participants in a conversation to make tactical changes in what they say? What strategies are open to them? These are different questions from the one which addresses itself to the form of the sentences. To be a full participant in a conversation one must know not only how to make well-formed sentences but also how to perform them in accordance with personally desired intentions. This ability can be termed 'transactional' competence. It entails not only the productive skill but also the knowledge of how to interpret the tactics of other interlocutors. As participants in social transactions, we have varying degrees of knowledge about other speakers' intentions. Just as the form of these sentences can be ambiguous, so may the transactional values be interpreted in different ways. A fully valid transactional analysis must answer the question: what possible intentions can each interlocutor have, as reflected not only by the syntax and lexical content of sentences uttered but also by the intonation and kinesics used? The distinction--traditional in linguistics--between denotation and connotation is not enough in itself to answer this question since what we would include under connotation would not be adequately differentiated.

In answer to the question initiating the dialog above (Well, how did you make out?) B could have picked among several alternatives (I made out very well, I made out better than you expected I would, Take a guess, and so on). The choice would depend on just what B's transactional strategy was at the time. If we are strangers (or passing acquaintances) of A and B, we would be hard put to determine all the influencing factors. Are A and B friends of long standing? Is B's personality of a boastful kind? When we linguists approach the analysis of speech in use, we must remember that we are excising a brief instance of interaction, an episode in what is often a long-standing relationship between interlocutors. This point helps us not only to understand our limitations but also suggest answers to some questions. One such question is why conversations between strangers tend to be more conventionalized and embellished with few idioms. The answer must lie, at least in part, in the fact that unacquainted interlocutors must overcome the lack of knowledge of each other's intentions. To do so, they use language which is more overt in its transactional value.

Even in conversations between strangers a number of different strategies are often available to the interlocutors. For example, a person waiting to see the doctor might turn to another person occupying the same waiting room and ask permission to

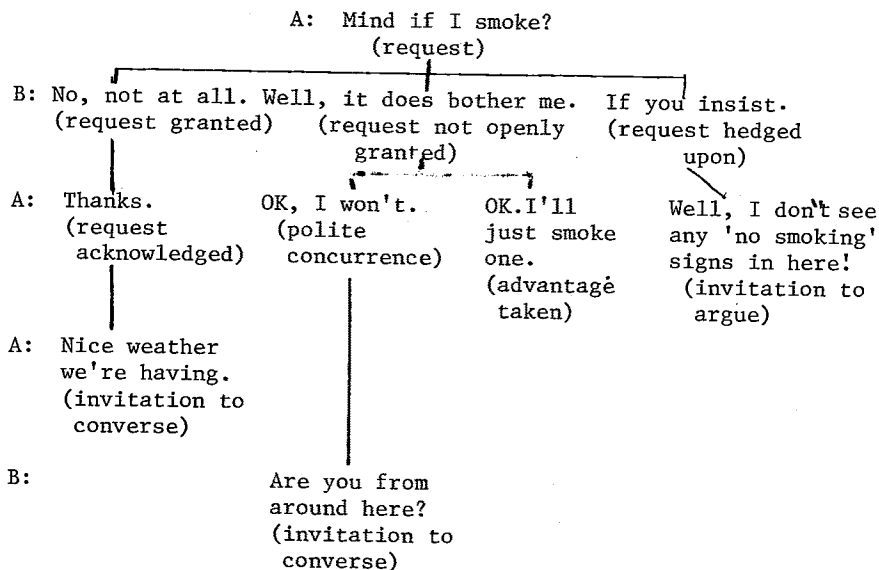
smoke. The request for permission is, in itself, the outcome of an initial decision to engage in a politeness routine. The other option would be simply to light up, without saying anything. The request, when and if it is made, can take several forms: Mind if I smoke?/Will it bother you if I smoke?/Does cigarette smoke bother you?/Is it alright if I smoke? and so on. The options include even offering the other party a cigarette before lighting up, in which case the opening lines of the dialog could go as follows:

A: (Care for a) cigarette?

B: No, thank you. I don't smoke.

A: Then, will it bother you if I smoke?

At this point, B must make some decision as to granting the permission. Many factors affect B's decision, among them, the degree to which cigarette smoke is bothersome, a perception of how much social control to exert in the waiting room, and the impression of friendliness or animosity shown by the petitioner. The choices of B's responses to A's opening request and A's verbal reactions are varied and can be arrayed on a tree diagram, according to their transactional values (see Di Pietro 1978, for further discussion):



It is difficult to indicate all the transactional values that each verbalization would have in the above conversation. The options are not simply requests, denials, or acceptances, they are also marked by transactional features of hostility, friendliness or even willingness to enter into further conversation. A's comment on the weather or B's question about A's place of residence can be taken as openers to additional conversation, moving away from the topic of the original theme of smoking.

3. The interactional dimension. It becomes evident that we need a third dimension of conversational language when we attempt to discuss the social and psychological roles being played by the interlocutors and the effects these roles have on language use. This third dimension, which we call 'interactional', is the most complex of the three outlined in this paper. The influence of role enactment on language use and form usually requires that the analyst gain familiarity over time with the individual's personality, character, motives and particular interactional style. For example, the physician who sees a patient on a regular basis should be more able to interpret that patient's utterances than the physician who is called in on a moment's notice. By the same token, salespersons are liable to choose verbal strategies much more efficiently with 'steady' customers than with first-time visitors to their places of business. A teacher gets to know students and their capabilities as a result of many verbal interactions over a school year (see Di Pietro 1980 for additional discussion of the effect of scripting on conversational language). We can also observe that communicational disturbances come about when long-standing relationships (such as parent/child or husband/wife) do not promote a facility of interpretation of verbal exchanges which is expected of them.

Each of us plays several types of roles in interacting with others. We move from setting to setting in our daily lives and we adjust our interactional styles accordingly. To facilitate the understanding of roles in verbal interaction, we can make several initial observations which are open to theoretical validation.

3.1. Role complementation. First of all, roles appear to come in complementary sets (e.g., buyer/seller, teacher/student, parent/child). Interactions in which the participants play complementary roles have predictable outcomes. Witness the following possible exchange between a salesclerk and a customer:

Salesclerk: Help you, ma'am?
 Customer: I'd like a pair of gloves, please.
 Salesclerk: What size and color?
 Customer: A 5, in black.
 etc.

To illustrate a non-complementary role interaction, we can use the same setting of the department store and turn the customer into a 'window-shopper'. In such a situation, the salesclerk may try out several ploys in an effort to force the window-shopper to shift roles:

Salesclerk: Help you, ma'am?
 Window-shopper: Just looking.
 Salesclerk: Have you seen our new gloves?
 Window-shopper: I'm not interested in gloves.
 Salesclerk: They're marked down this week.
 Window-shopper: I don't need any.
 etc.

Perhaps the salesclerk will succeed in converting the window-shopper into a customer. Perhaps not. Whatever the outcome, the linguistic analyst should be interested in the verbal signals which mark the directions taken by the interaction. A general question to be answered by the linguist is: what verbal characteristics can be ascribed to the portrayal of specific role types?

3.2. Time limitations. Interactions may be either long-term or short-term. Short-term interactions do not involve the extended commitment of the interlocutors to a particular position in life or stance on an issue that characterizes long-term interactions. Buying a pair of gloves from a salesclerk who is a complete stranger and who may never assume the role of steady supplier of clothing is a short-term interaction. Assuming employment as a buyer for a large firm may involve a long-term commitment to interact with a number of other people playing roles as long-term vendors. Some characteristics of long-term interactions include conversational openings consisting of commentary about personal matters (e.g., How's the family?/Where are you going on vacation this year?, and so on).

3.3. Overlapping. Roles may overlap. There are at least three types of roles that people play, often simultaneously (social, emotive, and maturational). Social roles, such as the buyer/seller one may be enacted at the same time that one or more of the interlocutors are reaffirming or establishing a friendship bond. Examples come readily to mind of sales pitches from used-car dealers who want to be the customer's friend. What is more, the interaction may include a maturational perspective in which the individuals act as 'parent', 'child' or 'adult' to each other. Witness the maturational variation among the following admonitions:

If you eat that, you'll get sick (adult to adult)

Don't eat that! (parent to adult)

Ya gonna put that in your mouth?! Yeech!

(child to child)

The traveller on European trains who is able to read the multilingual sign posted on window-sills in each wagon cannot help but be struck by the difference in maturational role relationship implied between the rail company and the passengers in the German and Italian versions. In German, the sign is forboding (Nicht hinauslehnen! 'Don't lean out!'), while in Italian, it advises (E' pericoloso sporgersi. 'It is dangerous to lean out'). Direct commands are, of course, frequently used in parent/child interactions because they require little syntactical processing in order to arrive at their underlying meaning. Statements of fact, on the other hand, must be interpreted in terms of their potential pragmatic implications. Adults speaking to adults tend to use more advisory-type constructions.

4. Applications to second-language learning. There is considerably more to be said about roles in conversational interaction (see Di Pietro 1981ms.). The purpose of this brief presentation has been only to sketch out the essentials of an approach to the analysis of conversational speech which may be very productive.

Recognition of the two dimensions (transactional and interactional) beyond the artifactual one yields a considerable expansion of the linguist's analytical concerns. Some notable progress has already been made in the directions needed (see, for example, the work described in Schiefelbusch 1978). An area which provides not only much raw data but also application of findings is that of second language acquisition. In this context, the Council of Europe has already adopted the so-called 'functional/notional' syllabus of D. A. Wilkins (1976) to stand as the framework for learning the languages of the Common Market countries. This syllabus consists of a list of pragmatic functions to be expressed universally (e.g. how to ask for information, how to refute, argue, agree). It is limited in many ways, primarily because it functions in only one dimension of conversational language--the one we have termed 'transactional'. The community language-learning model of Charles Curran (1976) addresses the interactional dimension, guiding the teacher in how to utilize group dynamics in the classroom. It outlines how the roles of 'learner' and 'knower' can be exchanged so that acquisition of the target language is facilitated. The various schools of the audiolingual approach have developed novel ways to bring the inherent analytical skills of the learners to bear on acquiring the grammatical artifact of the target language, such as 'contract learning' and the 'silent way'.

What we need is a new global approach which integrates the contributions of each teaching model. At the same time, we linguists need to develop analytical skills and procedures to enable us to view language not only as a grammatical artifact but also as the potential verbal expression of humans who engage in a host of social transactions and who manage, with varying degrees of success, to enact some rather complex psychological roles.

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THE ACQUISITION OF PRONOUN COMPLEMENT STRUCTURES IN FRENCH AND ENGLISH*

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Introduction:

Personal pronouns, and in particular their cliticization, have long posed key problems in the generative syntax of French. From a transformationalist perspective (for example, Kayne, 1975), personal pronoun complements originate in a post-verbal position and undergo, in a language such as French, a movement transformation which places them before the verb (*ibid.*, p. 76).

As we are all aware, the transformational account of the relation between the position of NP complements and that of corresponding personal pronouns has since been reconsidered (see, for example, Wehrli 1978). But in addition to purely formal arguments, language acquisition studies can also shed some light on the origins of those pronouns which become or are cliticized to the verb: Do acquisition stages exist during which non-stressed pronouns occupy non-clitic positions? Are all pronouns tonic at some stage, regardless of their position? For those who consider language acquisition as a source of arguments for theoretical linguistics, the answers to such questions could help in deciding whether unstressed pronouns should be derived from their tonic counterparts, and correspondingly clitic positions (in a language such as French) from disjunctive positions.

The following study started with the problem of the cliticization of personal pronoun complements. Can one find a stage at which unstressed pronouns are found in positions other than cliticized to the verb in the speech of pre-school-age children learning French (and in some cases also English) as a first language? In other words, can unstressed pronouns be separated from the verb by stressable forms, or, in French, directly preceded by the (non-imperative) verb?

Studying data from bilingual children and as well as the results of comprehension, elicitation and imitation tests administered to unilingual French children of comparable age groups, we concluded that the children at the age studied gave no evidence for a period where unstressed pronouns appear in non-clitic positions. It seems that unstressed forms and clitic positions are learned at the same time. But we wished to investigate the problem further: In more general terms, under what conditions and in what environments do personal pronoun complements appear?

In French, is the acquisition of pronoun complements more difficult than that of pronoun subjects, due to the position of the former in relation to that of NP complements — even if one does not derive them from NPs, nor postulate pronoun reduction or movement rules? What is the status of double clitic pronoun complement sequences: relics of school or lexicalized French and the product of a linguist's English, or generated by rules already productive in pre-school-age children? Generally speaking, what relationships exist between the sub-categorization of verbs for NP and PP complements and their pronominal counterparts in child as opposed to adult speech? Are all the possible sequences and types of nominal and pronominal complements early acquisitions in child syntax, or do certain complement types appear later than others? In child French, are post-verbal complements accompanied by pre-verbal clitics, as the subject is by nominative clitics (Lazure, 1976)? Can we attribute possible differences between the child's and the adult's pronominal structures to demonstrable complexities in the system? Are disjunctive indirect and direct pronoun complement forms necessarily stressed in child French? Do systematic disparities exist between the acquisition of pronoun complements in French and English, and if so are they attributable to inherent differences in the pronominal systems of the two languages?

An examination of our corpus and the results of our tests enabled us to answer some of the above questions more completely than others. Our French corpus was comprised of the spontaneous speech of two bilingual children, recorded once a month between the ages of 4,3 and 5,3 in one case (L.), and 4,5 and 5,5 in the other (M.). Our English corpus included the above-mentioned children plus a third child, (Md.), recorded in the same manner between the ages of 3,10 and 4,9.

We will begin with a discussion of our study dealing with the acquisition of proclitic pronouns in French, data collected from a group of unilingual speakers of Québécois French between the ages of 3,6 and 5,9. We will then compare this experimental data with that from the longitudinal study of the spontaneous (French) speech of the two bilingual children.

In the experimental study, we compared the production and comprehension of the double versus the simple pronoun complement structure: (1) Marie la lui donne, versus (2) Marie lui donne. Forty-five unilingual francophone children were divided into three groups with the following mean ages: 3,7, 4,6, 5,4. Two tests were used in the study of production: imitation and elicitation, with reinforcement in the form of pictures. (3) is a sentence given by the experimenter and imitated by the child: (3) Les enfants veulent des jouets et les parents les leur achètent. Next, an example of the experimenter's utterance in the elicitation test with an "ideal" corresponding answer: (4) Loulou donne du lait à ses petits chats. Qu'est-ce qu'elle fait Loulou, avec le lait, à ses petits chats? — Elle leur en donne. We wanted to

see what modifications the children would make when imitating and to evaluate the children's spontaneous production in situations where two pronoun complements were called for. The comprehension study involved a test in which the child had to act out the interviewer's sentence by moving around certain toys: (5) La poupée veut la balle et la souris la lui donne. The clitic combinations under study only included the third person, the use of pictures limiting us to third party references. It must be noted that sequences where the accusative precedes the dative, as in la leur, les lui, correspond in general to a simple clitic in adult Québécois French.

The basic hypothesis of our study was that significant differences among the age groups would appear in the production and comprehension of clitic sequences. We would expect proclitic sequences to be difficult structures to acquire and to master, given that they upset the basic order of constituents in French: SVO becoming SOV. We might also find that the younger children would prefer non-clitic post-verbal counterparts of these sequences, maintaining the basic order of constituents. For example, the children might avoid sequences such as (6) La voisine lui en donne, preferring sequences with post-verbal complements such as (7) La voisine donne des fruits à la madame, or (8) La voisine donne des fruits à elle. We will now look briefly at the results of the tests.

The imitation test: The tendency to reduce double clitic sequences (especially accusative + dative) to a single clitic went up noticeably with the age of the child. Thus, this trend was markedly greater in the eldest group than in the youngest. One might conclude that the youngest children simply followed the orders given them, whereas the oldest used their own grammar, one which is very close to the adult model. It must be noted that the middle children produced the greatest percentage of errors in relation to the adult model: errors of gender, number and order. The number of errors for the oldest group was considerably lower. It is possible that the children of the 4,6 group were in the midst of acquiring the reduced structures and that false hypotheses concerning possible deletions were the cause of various errors. Moreover, we observed that the children did not tend to use non-clitic counterparts in the imitation test (neither tonic pronouns, nor the corresponding NPs).

The elicitation test: Two general tendencies can be noted for the children as a whole: First, more than half the answers given were simply-clitic structures. The tendency to avoid double cliticization went up regularly and markedly from the youngest to the oldest group. In 10% of the answers, the children did produce double clitics. But these answers were limited almost exclusively to a small number of the possible sequences, including lui en and se le in its reciprocal interpretation.

Secondly, we observed that in approximately 25% of the answers, the children used a non-clitic counterpart of sequences calling for cliticization; that is, they repeated the NP's in the question. This observation held good for all the age groups, but the tendency was stronger amongst the youngest subjects. Again, the highest percentage of errors was produced by the middle group (4,6), who made order errors such as (9)*: Le monsieur leur le donne, as well as referential errors such as (10): lui where leur was called for.

The comprehension test: The comprehension test provided us with the highest number of correct responses, i.e. corresponding to the adult grammar. This test consisted of miming, using toys provided, sentences containing double pronoun complements. In 90% of the responses, the children correctly reproduced the double clitic interpretation, comprehension increasing by age group. There was a slight tendency (4% of the responses and among the youngest children) to act out only one of the clitics. Despite the generally good performance, however, certain errors of interpretation in the double-clitic sequences did appear, particularly among the youngest subjects. The children generally made the same types of errors: for example, they had problems with leur in such combinations as la leur, les leur, and with reflexive se. Leur was often given a reciprocal interpretation, i.e. la leur envoie (throw it to them) interpreted as se l'envoient (throw it to each other). In the case of se, certain children did not give the reflexive interpretation.

The comprehension test was the easiest, followed by elicitation and imitation, in that order. At no time did any of the children produce a weak pronoun in a non-clitic position. Moreover, we noted relatively few substitutions of post-verbal complements (nouns or strong pronouns) instead of the expected clitics. The preverbal position of pronoun complements did not seem to render these sequences difficult as such, at least for the children of the age groups under study. Our subjects often deleted one of the clitics, as adults do for accusative + dative sequences. On the other hand, they preserved certain sequences such as lui en and les y, again following the adult model. This seems to indicate that children learn such pronouns in their unstressed forms and their clitic positions. And finally, the extent to which the children reduced and amalgamated these forms would indicate that the clitics and their variants are learned early. These reductions and amalgamations – spontaneously produced by even the youngest children in the study – appear at three levels: within the pronoun itself: lui → [ɥi], [li], [il]; in certain combinations of clitic complements: lui en → [já]; and with the CL-SUJ after a dislocation: (11) Jeannot [ja] leur raconte = ... il la leur... . In certain cases however, the children's reductions did not correspond to those possible in the adult grammar: (12) Jeannot [nacə] raconte = ... la leur... .

We will now briefly discuss the pronominal object structures in the French longitudinal spontaneous speech data gathered from the two bilingual children mentioned above: First, we observed a highly developed and productive pronominal clitic object system. A nearly complete range of clitics, including me, te, le, la, les, lui, as well as the ProPP's en and y were quite frequently used. L.'s pronominal object system was much more developed than his pronominal subject system. In the following sentences, all produced by L., the pronominal subject appears in its tonic form, while the complement is cliticized: (13) Moi l'a oublié, (14) Moi te faire des orteils, (15) Toi le sais. Only rarely did the two children use tonic object forms in a post-verbal position – aside, of course, from situations where pragmatically deictic or emphatic contexts permitted the use of such forms: deictic context: (16) Deux fois, on avait lui (L. points at the letter "T"), (17) Après c'est lui qui donne ça à elle (L.). Neutral context: (18) Là, j'vas faire moi (= me dessiner, L.), (19) Je dis à elle que c'est Stéphanie. (M.). The neutral context examples are the only two of the kind found in the nine recordings studied per child.

Secondly, we believe we can refute the notion that double clitics are complex and difficult structures which are acquired late. The two children used numerous clitic combinations other than those of the third person accusative + dative – the same structure avoided in adult language. (20) Ma mère me l'a dit (M.), (21) J'vas te l'dire (M.), (22) J'vas y en mettre (M.), (23) C'est lui qui me les donne (L.). Note that even though third person accusative + dative sequences are not found in these children's speech, the relevant clitics are used individually (except for leur): (24) Ma toutes les mett' là-dedans (L.); (25) J'veux pas la chanter (M.); (26) On va lui redonner celui-là (M.); (27) Si tu promets que tu vas pas le dire à ma mère, j'vas te le dire (M.). We observed the same behaviour in the two bilingual children with regard to such clitic sequences as in the unilingual francophone group, i.e. a tendency to reduce the sequence to one clitic, as in adult language. Is the rarity of these sequences due to the fact that they permute the case order (dative + accusative) characterizing the other relevant sequences of pronoun clitic complements?

In general, the spontaneous reductions in clitics and clitic sequences produced by the children conformed to the unilingual francophone model (for both children and adults): (28) Je les: Oui, les affaires, [zə] sais (L.). (29) Lui: Pis moi, ma aller [li] dire (L.). (30) Te le: Moi te l'dire (L.). (31) Lui: Pis là i [j] a dit (M.).

Finally, we would like to mention the presence of seemingly redundant clitics in non-dislocated contexts. We found sentences such as: (32) Moi l'aimais pas ça (L.), (33) Moi l'a un chapeau de football, moi (L.), and (34) Tout l'monde l'aimait pas ça (L.).

where the pronoun complement precedes a verb which begins with a vowel and is followed by a direct object. We believe that the l' appears in response to the initial vowel of the verb. This type of example would indicate that certain sequences remain unanalyzed (like il y en a), especially in child language, even though all the component morphemes occur independently in other environments (cf. Zwicky, 1977, 27).

We then looked at English nominal and pronominal complements produced by the three bilingual children mentioned above. They showed no hesitation in using pronouns, for example: (35) Md: I got them for my party. (36) L: You can read this; and adhered almost without exception to the adult model when positioning the object complements in relation to the verb. Deviations from the norms for pronoun use were referential rather than syntactic: (37) Md: He shoot birds... then the dogs go and try to get it. Each dogs has to get it. (38) Md: I see them [windmills] with cows in it [one windmill].

The use of particle verbs with pronoun objects did not pose any problems either: (39) M: I wanna mix them up, despite the constraint on the position of pronoun complements with respect to the particle, which could conceivably render more difficult the acquisition of structures involving such verbs.

Occasionally, the children failed to supply a complement (direct or indirect) in an obligatory context. (40) M: Stephanie has not a bicycle 'cause I'm so big I can't even use $\emptyset$ anymore. Such omissions were nevertheless very rare. On the other hand, we only found one example of the opposite situation, that in which the child supplied a complement after an intransitive verb: (41) Md: She fainted it. She fainted. Note that the child immediately corrected herself, deleting the offending pronoun.

In comparison, complement structures other than the direct and indirect object were not always so well mastered by the children. For example, the verb to put needs both a direct object and a locative complement. For M., the oldest of the three children, the sub-categorization of this verb did not present any problems. Md., the youngest of the three, used the verb to put 28 times in the transcriptions studied. She omitted the locative complement three times: (42) Got to put band-aid $\emptyset$; and the direct object only once: (43) Doesn't get rusty so I put $\emptyset$ in here. L., the middle child, sometimes forgot one or the other of the complements, but never both at once. The following example indicated that, at age 5y 1m 20d, L. had not yet mastered the sub-categorization of this type of verb. Notice that while in the first sentence of the example the locative is missing, the second sentence is complete: (44) So he put something $\emptyset$. He look at his garden, put some, some [i::d $\emptyset$] (= seeds) in his garden. This last PP, however, should have been pronominalized.

Let us now look at verbs sub-categorized for a double object. This group of verbs is much smaller than its single-object counterpart, and can itself be divided into two sub-groups: a) those which do not permit dative + accusative order, e.g.: (45) I introduced him to you vs (46)* I introduced you him and b) those which do: (47) I gave it to him vs (48) I gave him it.

To what can we attribute the relative rarity of sentences such as (48) – at least when compared to the frequency of the French counterpart? Could it be due to the morphological ambiguity between the dative and accusative pronouns: (49) I see him vs (50) I give him the book. Or is it the fact that clitic (and therefore weak) pronouns are not synchronically distinct from the tonic (stressed) forms? Then again, can this rarity be due to the fact that the tonic and reduced forms of these pronouns are not in complementary distribution in relation to the verb? We leave the question open to debate.

The spontaneous speech samples studied yielded very few examples where the above-mentioned verbs and their accompanying complements (pronominalized or not) were used. However, when the children did employ such verbs, about half of all sequences produced were of the following type: Verb - Pronoun (I.O) + NP (D.O). This fact fits in well with the theory which rejects the dative movement transformation. We leave open, however, the question of why the dative in this structure may "prefer" pronominalization and the accusative its NP form.

We also found isolated cases (one or two examples each) of certain other double-complement forms, with or without the preposition: NP to NP: (51) Md: I like to give ears to people; NP for NP: (52) M: Go buy food for Uncle Frank; Pronoun to NP (53) L: I give it back to Tammy; Pronoun for Pronoun (54) Md: I made it for you. Examples of Pronoun-Pronoun (a sub-case of the so-called dative-movement structure) were very rare: two examples for M., and one for L.: (55) M: A little mouse told me those; (56) My grandmother gave me it; (57) L: I know how to build him one. The three examples cited above are not, however, equally acceptable. Certain dialects do not easily accept sentences such as (56), while the acceptability of the verb tell in (55) is debatable. Only (57) seems entirely acceptable, and here the child used an indefinite, rather than a personal pronoun as direct object.

Looking now at omissions of the direct or indirect object in the double complement construction, we notice that Md. never forgot either of the two complements, while M. forgot an indirect object once: (58) M: I gave cookies Ø. L. omitted the indirect object three times: (59) She just loaned it before you come here. (60) I'll show all the things before you come here. (61) No! Toad gave a cookie! This last example is of special interest in that the interviewer had just asked L. a question meant both to verify

his comprehension of the subject and object (i.e. Who gave a cookie to whom?) and to elicit a double complement structure. In his answer, the child identified the subject correctly but neatly avoided using an indirect object.

Examples such as the above lead us to discuss meaning preservation in sentences lacking an obligatory complement (both single and double complement sentences). None of the ungrammatical forms produced by the children presented any problems of interpretation, despite the absence of an obligatory complement. Pragmatically speaking, these sentences were as clear as their grammatical counterparts. Material not provided in the sentence itself was always present in the immediately surrounding context.

With regard to vowel reduction in personal pronoun objects, M. and Md. conformed to the adult model in differentiating stressed from unstressed forms: (62) M: And I remember when I went to visit [ðu] (= them) vs (63) Md: He kisses [hɪ]. Moreover, these two children also made other types of reductions typical of North American English, i.e. in prepositions: (64) Md: Look [ə] those (= at); and in conjunctions: (65) M: I speak French and English.

L.'s reductions, on the other hand, were generally not the same as M.'s and Md.'s. The phonological changes he made in English pronouns seemed like those which an imperfectly bilingual native speaker of Franco-Québécois would make.

The mastery of vowel reduction may serve as an indicator of the predominance of one language over another. Looking at L.'s syntactic "problems", for example, we noticed that the same tendencies were present in both languages, whereas in "adult" vowel reduction, L. was much more advanced in French. We did, however, find several examples of "native-speaker" reduction in L.'s English speech sample, as well as at least one example which seemed to come neither from French nor English. (66) L: I'll try to make [dɪ] (= them). But it must be noted that Md., the least bilingual of the three children, made an identical non-native-like reduction in English, her dominant language. (67) Md: Jack O'Lanterns are nice. You can light [dɪ] (= them). M., the most fully bilingual of the three (on other criteria), seemed to have mastered the vowel-reduction system of both languages.

Conclusion:

We would now like to review the questions introduced at the beginning of this paper. We noticed first of all that the distribution of pronoun complements in relation to the verb and other complements was an early acquisition, and, with few exceptions, followed the adult model. The pre-verbal position of these

complements in French did not seem, in itself, to cause any problems. Nor can one say that double clitic sequences are, as such, particularly difficult. The study of the elicited and spontaneous data in French did show that accusative + dative sequences (thus not including se, y and en) seem both difficult and rare, but this is like in adult language. We speculated on a possible explanation for this phenomenon. In examining the corpus of one of our young informants, we saw that a child can produce clitic complement sequences before s/he masters the clitic-subject system. This suggests that the contrast between the pre-verbal position of personal pronoun complements and the post-verbal position of NP complements does not constitute a crucial problem.

We noted that the situation was not the same in English. Pronoun complement sequences after the verb, which are only possible in the structure produced by the famous "dative movement" (in transformational terms), were practically non-existent in the speech of our young informants. This calls for some explanation, since the French counterpart, whose pre-verbal position should make it more complex, is quite common. We believe this absence may be the result of the accusative-dative ambiguity in English pronoun complement forms. In addition, the unstressed form in English is but the reduction of the tonic form and occupies the same position as the latter. An examination of the various types of nominal and pronominal objects produced by our informants in English confirmed the results of Bongard's (1976) study on school-age children, which showed that, despite their combinability with other types of complements, pronouns are not used to the same extent in English as they are in French. The importance of such sequences as (68) I told you, I know, as compared to (69) Je te l'ai dit, Je le sais, is an indicator of the difference in the use of pronouns in the two languages. We have no explanation for this phenomenon excepts to recall (with John Goldsmith, personal communication) that clitic pronouns belong to the morphological component of French and are intimately related to flexional morphology, a sub-system which is richer in French than in English.

In French, the reduced forms of pronouns seem generally to be learned along with pronoun distribution.¹ We suspect that the relative mastery of such reduced forms may be an indicator of which of the two languages predominates in the bilingual child.

We also mentioned the pairing of French post-verbal complements with pre-verbal clitics, which certain children tend to do in situations other than dislocation. But this phenomenon seems much less frequent and certainly more ambiguous than parallel repetitions of the subject, e.g.: (70) Mon frère, lui, [il] fait ça. Often, accusative "pronouns" accompanying a post-verbal direct object precede vowel-initial verbs. These l's permit the preservation of #CV ... structure. In such cases, the child seems to have left unanalyzed the clitic + verb sequence, even if the two elements appear separately elsewhere (cf. Zwicky, 1977).

At the other extreme, we have as yet no explanation for the post-verbal tonic pronouns in French which are used alone as direct or indirect objects outside of deictic or emphatic contexts. Do these post-verbal pronouns represent a stage analogous to that of the *moi*, used by one of the children as the lone pronoun subject of the first person singular? Data gathered from a younger subject indicate that this may well be the case.

The greatest difference between our French and English data on child pronominalization seems to revolve around the structure *V + dat.+acc.*, which we have just examined in English, and its French counterpart, *dat.+acc.+V*. Whereas the latter was very common, the former was rarely produced by our subjects. The different acquisition patterns of such parallel structures in the two languages must reflect the disparity between their roles in the two adult grammars. The fact that the combination of verbs with dative + accusative pronouns is much more common in French than in English may be linked to the different status of the French from that of the English pronoun-complement system: Zwicky's (1977) "special" vs "simple" clitics respectively. In other words, we find ourselves comparing a totally cliticized pronominal sub-system (in French) to a system which, although it is evolving in this direction, has not yet arrived at total cliticization (Fischer, 1976). Unlike Fischer, however, we are not convinced that children acquiring English are in the forefront of this change.

NOTES

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- 1 In comparison, articles after prepositions in French are often found unreduced (*à + le, de + les*, etc.) up to school age (Ellen Adiv, personal communication). This is in spite of the fact the these forms, unlike the non-reduction of certain complement pronouns, are non-standard as well as non-native.

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NEUROLINGUISTIC ORGANIZATION OF A BILINGUAL'S TWO LANGUAGES

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Four main types of studies have been concerned with the organization of the two languages of bilinguals: (1) Linguistic studies that have looked at the linguistic structure of languages in contact (Weinreich, 1953); (2) Psychological studies that have investigated bilingual linguistic memory (see McCormack, 1974, 1977 for a review); (3) Neuropsychological studies that have examined differential lateralization patterns of languages in the brain of bilinguals (see Vaid and Genesee, 1980 for a review); and (4) Neurolinguistic studies that have considered the actual neurofunctional organization of the two linguistic systems of bilinguals (Lambert and Fillenbaum, 1959; Ojemann and Whitaker, 1978; Whitaker, 1978; Silverberg and Gordon, 1979).

Linguistically, as can be measured by their verbal output and evidenced by their comprehension of verbal input, bilinguals may organize each aspect of their two languages in one of three ways. At each level of linguistic structure (phonological, morphological, syntactic, semantic) they may (1) keep each system separate from the other, and to the extent that they do, they will use both languages like native speakers, and in this case neither language will contain intruding elements from the other; (2) organize parts of their second language in accordance with patterns appropriate only to the first, and to that extent will exhibit in their speech unidirectional intrusions of L_1 elements when using L_2 ; (3) blend some of the elements of the two systems when using either language. In this case intrusions are bidirectional and to that extent neither language is used in a native-like manner. Unidirectional or bidirectional intrusions may occur at each and every level of linguistic structure, and the basic three patterns of organization referred to as coordinate, compound, and subordinate, may be exhibited in various proportions at each level (Paradis, 1978a).

Studies of bilingual linguistic memory have focussed on the organization of the semantic field of words used in isolation, outside of any linguistic or situational context, with a view to determining whether bilinguals keep the meanings of their two languages in a common store or in two separate stores. Results of some experiments have been interpreted as yielding support to a one-store hypothesis, while others are taken as evidence of a two-store system. The ambiguity of the results may be partly explained by the lack of control in these experiments for seman-

tic overlap between stimulus words and their translation equivalents, as well as for different types of organization of the semantic networks of the subjects involved (Paradis, 1978b). The fact that experiments by Kolers (1968) and others indicate that a bilingual person actually combines parts of both hypotheses can be accounted for if we assume not one, nor two, but three stores with both languages differentially organizing the elements of a common conceptual-experiential information store (Paradis, 1980a).

Based on insufficient clinical evidence from cases of aphasia in polyglots, and on inconclusive experimental evidence from dichotic listening and tachistoscopic tests, some authors have postulated a greater participation of the right hemisphere in the language functions of bilinguals than of unilinguals. At least four hypotheses have been proposed to account for the alleged differential lateralization, some of which are not only mutually exclusive but contradictory: (1) the age hypothesis according to which a language acquired after puberty will be less lateralized; (2) the second language effect hypothesis, according to which a second language, learned once a first has been acquired, will have greater representation in the right hemisphere; (3) the stage hypothesis, according to which the right hemisphere will be maximally involved in language processing at the beginning of L_2 acquisition, and will then gradually shift to the left hemisphere as fluency in L_2 improves; (4) the bilingual type hypothesis, according to which coordinate bilinguals, keeping their two languages more separate, will store them in different ways, with a greater involvement of the right hemisphere for one of the languages.

The last predicts that the more the languages are each kept native-like and free of interference, the greater the participation of the right hemisphere. The previous hypothesis predicts the opposite: the better the second language is mastered and the more it is spoken with native-like fluency, the more it will be *left* lateralized.

With respect to the fourth kind of inquiry, on which this paper will focus, Lambert and Fillenbaum (1959) may have been perhaps a little too hasty in assuming that coordinate bilingualism, which reflects the organization of the *linguistic* systems, would also lead to more functionally separated *neural* structures. The data collected so far from the recovery patterns of bilingual aphasic patients do not support such a hypothesis (Paradis, 1977). This lack of support may be due at least in part to inconsistency in the criteria for classifying types of bilinguals. The inconsistency has been manifold. Ever since the type of organization of the two linguistic systems of the bilingual speaker was causally related to the context of acquisition by Ervin and Osgood (1954), the identification of type of bilingualism has been plagued by the internal ambiguity of the definitions. (1) Some authors label their subjects "coordinate" when they learned

one language at home, the other in the separate context of the school. However, if the method used at school was one of translation, it is more likely to have encouraged subordinate bilingualism (i.e. the second part of Ervin and Osgood's (1954) definition of compound). To increase the confusion, some authors have begun to call early bilinguals "compound" and late bilinguals "coordinate". (2) No distinction is made between compound and subordinate, both being labelled compound, thus blurring the distinction between unidirectional and bidirectional interference. Subordinate bilinguals speak their mother tongue like native unilingual speakers of that language; compounds, to the extent that parts of their linguistic systems are fused, do not use either language like native unilinguals. (3) The coordinate-compound distinction as it has been used by psychologists refers only to the meaning of words (often connotative) and does not take into consideration any other part of linguistic structure. (4) Even at the semantic level (as well as at every other level) the type of organization is likely to be a matter of degree, parts of the system being more or less organized in a coordinate, compound, or subordinate fashion. (5) Even when the context of acquisition has been properly determined, it does not necessarily follow that a given individual can automatically be labelled coordinate, compound or subordinate. Yet, in most clinical cases context of acquisition serves as the sole basis for classification.

Moreover, and much more importantly, the coordinate-compound-subordinate distinction, which refers to the organization of the grammar as evidenced by the individual's linguistic performance, may have no bearing on the neural substrate underlying the respective languages. At least four hypotheses must be considered.

(1) The extended system hypothesis: Additional phonemes (i.e. phonemes of L_2) are processed as allophones, phonemes used in different environments; morphemes of L_2 are processed like allomorphs (to be used only in the context of L_2); and new syntactic rules behave like different rules within the same language, such as may be found within different registers, or simply different patterns for realizing similar meanings within the same register, such as an active and a passive construction. Thus a bilingual subject may possess a stock of 60 phonemes instead of 36, each supported by the neural mechanisms that underlie phonemes of the languages in unilingual native speakers of those languages, and *mutatis mutandis* a similarly increased stock of morphemes, syntactic structures, semantic representations, etc.

(2) The dual system hypothesis: Phonemes of L_2 are stored separately in a different system of connections independent of L_1 . There are different networks of neural connections underlying each level of linguistic structure of each language. The two linguistic systems are thus separately represented in the brain.

(3) The tripartite system hypothesis: Those items which are identical in both languages are represented by one single underlying neural substrate common to both languages, and those which are different each have their own separate neural representation. Thus whatever two languages might have in common would be represented only once, and whatever would be specific to each language would be represented separately.

Each of these three hypotheses is compatible with each of the three types of linguistic organization of a pair of languages (coordinate, compound, subordinate). The type of bilingualism (i.e. the type of grammatical organization, including the meaning of words) may have no correlation with differential underlying neural structures. The neural correlates of languages may be determined by the type of linguistic structure of the languages involved, as in hypothesis (3); or each language may be treated separately, irrespective of overlap in linguistic structure, as in hypothesis (2); or both languages may be stored and processed in one common extended language system, as in hypothesis (1). In all cases, this would be irrespective of the type of bilingualism.

Hypothesis (2) assumes redundancy of representation of those elements that could be common to both languages, on the grounds that each language forms a system independent of the other, whether those languages share few or many features, and whether some of those features are *bona fide* members of the language(s) concerned or the result of unidirectional or bidirectional interference. The synchronic competence for each language, whether idiosyncratic or consistent with the norm of the respective unilingual speech community, is represented as a separate system. Hence compound or subordinate bilinguals would nevertheless have separate neural substrates for each of their language systems.

Hypothesis (1), on the other hand, assumes a single neural system for both languages, even in an (idealized) coordinate bilingual. Hypothesis (3) assumes a single representation for items common to both languages in coordinates as well as compounds. The only difference is, trivially, that for compounds, by virtue of the fact that their grammars exhibit a greater overlap, the languages would share a larger portion of the neural substrate.

In summary, coordinate bilinguals may have their two languages organized in their brain in one of at least three ways: (1) one common functional neural structure for both languages; (2) a separate functional neural structure for each language; or (3) separate functional neural structures for those features that differ between a given pair of languages, and one common functional neural structure for those features that are identical in the two languages. In this context, "functional neural structures" refer to functional mechanisms irrespective of their anatomical, biochemical or electrical correlates (e.g. whether

different neurons are involved, or different synaptic connections between the same neurons, or altogether different anatomical correlates, such as homologous parts of the other hemisphere).

Likewise with compound and subordinate systems. When both languages are spoken fluently, does it matter whether one or both or neither correspond(s) to the system of native speakers of a given speech community? To the extent that it differs from that of a native speaker, a linguistic system will include patterns other than those in a native speaker's system, but it nonetheless constitutes a linguistic system. That linguistic system (however idiosyncratic) can be assumed to be subserved by neural structures just like any linguistic system used fluently for communication. Thus some hypothetical compound bilinguals might have for one of their languages a grammar similar to that of native unilingual creole speakers. There is no a priori reason to suppose that a creole should be represented in a fashion in any way different from any other language. All that changes between the coordinate and the compound or subordinate is the organization of the linguistic system itself (i.e. the grammar) but a compound system is not formally different from any other linguistic system.

Whether one or both or neither linguistic system(s) of a bilingual correspond(s) to the system of a native speaker in some speech community is not necessarily relevant to the way it is represented in the brain. Hence, like coordinate bilinguals, subordinate and compound bilinguals may have their two languages organized in one of three ways and may thus have one common store for items of both languages; or a separate store for each language; or a separate store for those features that differ between the two languages and one common store for those features that are identical in the two languages.

On the other hand, the possibility of a different neural organization for each type of bilingualism, as suggested by Lambert and Fillenbaum (1959), is not a priori ruled out, which leads to a fourth hypothesis: (4) the bilingual-type-dependent system hypothesis: the type of bilingualism is reflected in the type of neural organization of the two languages. To the extent that bilinguals' two linguistic systems are coordinate (i.e. that their internalized grammar actually corresponds in each case to that of unilingual speakers of the language as a result of separate contexts of acquisition), neural structures underlying their languages are more functionally separate than in compound bilinguals (i.e. those whose internalized grammars incorporate non-native elements in one (subordinate) or both (compound) languages caused by interference from the other linguistic system, induced by learning the second language through translation or in the same environmental setting as the first, respectively).

Evidence from aphasia would tend to support a dual-system hypothesis, irrespective of type of bilingualism. Some patients

have been reported to have selectively lost comprehension as well as expression in one or more of the languages that they spoke fluently before insult. In cases of successive recovery, patients do not regain access to one or more of their languages until another has been well recovered. In cases of reciprocal antagonism, one of the patient's languages becomes inaccessible as the other is recovered (Paradis, 1977). More recently (Paradis, 1980b), two patients were observed with alternate antagonism. That is, for alternate periods of time they suffered word finding difficulties so severe that they could not name objects, describe pictures or speak spontaneously in one language while remaining relatively fluent in the other. This clinical evidence tends to show that a language can be selectively inhibited and therefore must be represented functionally as a system, separate from the other system to which the patient has access. Moreover, this seems to be the case, regardless of age or manner of acquisition of the two languages: the first patient had learned Arabic with a very traditional grammar-translation method after the age of 12; the second patient had acquired English from the environment during infancy.

On the other hand, the ease with which one may put on a foreign accent and speak L_2 with the phonemes of L_1 or vice versa, or intentionally use syntactic rules of L_1 when speaking L_2 or vice versa, or insert words and phrases of L_1 when speaking L_2 or vice versa (with or without corresponding switch of phonology), as well as add L_1 inflexions on L_2 words and vice versa, speaks in favour of the extended system hypothesis. Evidence that there is no need for an input switch (Paradis, 1980c), that in fact it could not be turned off, and that the processing of words in either language is unavoidable under any condition can also serve as an argument in favour of one extended system.

Electrical stimulation evidence from Ojemann and Whitaker (1978) would tend to support a tripartite system, or possibly a bilingual-type-dependent system, since within the language area for each of the two patients examined there appeared to be "sites common to both languages as well as sites with differential organization of the two languages", except that the areas of stimulation were much too extensive and imprecise for one to ascertain whether the same system of neurons had been disrupted on two separate occasions. This seems in fact unlikely since the authors report that stimulation at some sites disturbed naming in a given language on only some of the samples. If the sites were identical on each trial, it is difficult to explain why naming was not disturbed on *all* samples, and the fact that out of three stimulations English was disturbed twice and Dutch only once at any particular site loses much of its significance. Yet Ojemann and Whitaker interpret their findings as supporting a dual system because "there seems to be a differential representation of the two languages" since "in each patient, each language in part used different areas of brain" and "these areas of differential local-

ization provide an anatomic basis for the psycholinguistically described abilities to segregate different languages and switch between them as a whole".

Let us now consider a fifth hypothesis, or the sub-set hypothesis.

(5) Hypotheses (1) and (2) need not be mutually exclusive but may represent two aspects of the same phenomenon. Both languages might indeed be stored in identical ways, in a single extended system, though elements of each language, because they normally appear only in different contexts (elements of L_1 in the environment of other elements of L_1 , and likewise for elements of L_2), would form a *de facto* separate network of connections, and thus a subsystem within a larger system (that comprises both). According to this hypothesis, bilinguals have two subsets of neural connections, one for each language (and each can be activated or inhibited independently because of the strong associations between the elements) while at the same time they possess one larger set from which they are able to draw elements of either language at any time. Each subset, as a system, is susceptible of selective pathological inhibition, yet individuals with intact brains may alternately use elements from one and the other subsystem depending on the verbalizability (or ease of encoding) of any given notion in either system. Hence occasionally a German word or phrase may come to mind (i.e. enter consciousness) when one cannot find a suitable expression in English. It may be that the notion is more easily verbalizable in German, more salient, or that, not finding the proper term, one searches for synonyms, including words in the other language. One has equal access to both languages, though in normal circumstances the search is confined to the lexicon of one language. The phenomenon of retrieving a word of L_2 while searching for one in L_1 tends to occur less often after the speaker has been in a unilingual community for a while. The ease with which a given item is retrieved seems to be a function of both the frequency of use and the time elapsed since it was last encountered, be it within one or several languages.

There may still be individual differences between the neural correlates of L_1 and those of L_2 brought about by their respective methods of acquisition. Inasmuch as the two languages are acquired concurrently, it is not unreasonable to suppose that both are processed in identical ways. However when a second language is learned twenty years or more after the first, different learning strategies are likely to be employed, which in turn might lead to the use of different neural mechanisms (Lamendella, 1977). Differential localization according to whether the second language was learned by being heard or read is relatively well documented (Paradis, 1977). But the type of bilingualism, that is to say the type of organization of the linguistic competence of the two languages, may be independent of the different types

of neural organization that may be occasioned by different learning strategies entailed by age and/or method of acquisition - and these differences are likely to be too subtle to be measurable with the instruments available today.

In conclusion, there is no evidence that the grammar of each language, as evidenced by the subject's linguistic behaviour (and described in terms of a coordinate, compound, or subordinate organization of any part of any level of linguistic structure) is in any way subserved by correspondingly differently organized neural structures. This is not to say that the way languages are learned may not influence the way they are represented in the brain, but rather that these possible differences may be independent of the type of grammatical organization.

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ACQUISITION OF PAST PARTICIPLES BY L2 LEARNERS OF FRENCH

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0. Introduction

In this paper we report on a cross-sectional study focusing on the acquisition of the past participles of French verbs by English-speaking students enrolled in a French immersion program.¹ The paper shows that from a formal linguistic point of view, the morphology of the past participles of French verbs is rather complex and that this complexity results in errors. The study examines the underlying sources of these errors and whether the contribution of each error source changes in a predictable manner over time. It also analyzes the errors with a view to testing the psychological reality of a particular morphological analysis which has been proposed for past participle formation in French. Finally, it illustrates the fruitfulness of the application of a variationist approach to the study of the acquisition of verbal morphology.

1. Method

Our subject sample consists of grades 2 to 6 English-speaking Canadian students who at the time of data collection (Spring 1977) were enrolled in a French immersion program in Montreal. There were 15 students per grade level. Our subject sample also includes a control group of grades 2 to 6 French-speaking students who were attending a unilingual French language school also in Montreal. There were three such students per grade level. All the students ranged in age from 6 to 12 and were approximately equally divided into males and females. The comparison group was included since we were concerned with establishing a realistic gauge for the immersion students' acquisition of the past participles. It was not known whether the native speakers would also err in their use of the past participles as the available literature did not provide information on the age at which native speakers of French acquire the past participle forms.

Each student in both groups was interviewed for approximately 20 minutes in French. The interview questions were designed to elicit a spontaneous speech style. The interviews were recorded and then transcribed. The transcripts were checked for all contexts requiring the use of the compound past (either the *passé composé* or the *plus-que-parfait*).²

participles were tallied separately for each verb.

2. Past participles in French

In this section we present some necessary facts concerning past participle formation in French.

Although we do so from a formal linguistic point of view, this should not be taken to mean that learners of French operate in the same fashion as the linguist. It is a matter of empirical investigation whether they do or not.

From the point of view of morphology, past participles in French are of the form stem + inflection. In this way does Martinet (1969) analyze all past participles in French. Like Martinet, we shall distinguish three reflexes of the past participle inflection. These are illustrated below.

é [e]			ø			u [y]		
mang - é	[mãʒe]		dit - ø	[di]		ven - u	[vœny]	
trouv- é	[truve]		fait - ø	[fe]		cour - u	[kury]	
all - é	[ale]		pris - ø	[pri]		v - u	[vy]	
ét - é	[ete]		eu - ø	[y]		l - u	[ly]	

It should be noted that the past participle of some of the ø inflection verbs is subject to gender agreement (e.g., pris [pri] ~ prise [priʒ]; dit [di] ~ dite [dit]; etc.). Thus Martinet's three-way classification actually represents a simplification since it does not include the inflections [z] and [t]. Nevertheless we adopted his trichotomy as we disregarded gender agreement errors in our investigation of past participle formation.

As is well known, most (90% according to Guiraud 1973: 107) French verbs belong to the so-called -er group, that is, their infinitival and past participle forms are homophonous and end in the inflection [e]. This makes [e] by far the most generalized reflex of the past participle inflection. The remaining 10% of French verbs form their past participle with [y] or ø. Another distinguishing feature of the verbs belonging to the -er group is that the great majority of them have only one stem, which is homophonous with the present 1st, 2nd, 3rd sg. and 3rd pl. forms (e.g., je mange [mãʒ] ~ j'ai mangé [mãʒ-ə]). In contrast, most of the other verbs have multiple stems (e.g., il meurt [mœr]; nous mourons [mur-ø]; mourir [muri-ʁ]; elle est morte [mør-t]).

In summary, from a formal linguistic point of view, past participle acquisition in French involves learning: (a) the reflexes of the past participle inflection, (b) the stem(s) of the verb and (c) suffixation of the correct reflex to the proper verb stem. As such, accurate past participle formation is intricate and on this basis one can expect learner errors.

3. Previous research

In his longitudinal study of the acquisition of French by two native speakers during the years 0 to 4, Grégoire (1968: 130, 356) found a tendency on their part to assimilate the morphology of non -er verbs to that of the -er verbs. As concerns the past participle, Grégoire reported his subjects using forms such as metté and répondé instead of the appropriate forms mis and répon-du. He attributed these erroneous past participles to the powerful analogical effect of the morphology of the previously acquired past participles of the dominant -er verbs. In their analysis of the verb system of Toronto French immersion students, Harley and Swain (1978; 56, 57) reported similar analogical past participles (e.g., vené instead of venu). However, they also reported past participle errors not attested by Grégoire in the speech of his two subjects (e.g., prā instead of pris and courir/mettre instead of couru/mis). That such errors were not attested by Grégoire does not necessarily mean that they are particular to the French immersion students. This is due to the very limited size of Grégoire's sample. A larger sample of speakers might have revealed the existence of these new errors given that learners have been found to resort to different personal strategies in their acquisition of a given target language item (Hatch 1974). On the other hand, the immersion students' acquisition of French at a later age than native speakers may result in unique errors due to heightened hypothesis testing ability (Dulay and Burt 1974; Taylor 1975). A detailed study of the acquisition of past participles by a larger sample of very young native speakers of French is needed to resolve this issue.

4. Results

We will present the most general findings first. The error analysis revealed no past participle errors in the speech of the native speakers. We conclude from this finding that the native speakers had already completed their acquisition of the past participles of French verbs by the second grade. The immersion students performed to some extent like the native speakers since as early as grade 2 we found only an insignificant proportion of errors in their formation of the past participle of the -er verbs. The few errors that we did observe all seemed to be cases of substitution of a form which can be interpreted either as a present tense 1st, 2nd, 3rd sg. or 3rd pl. or as an imperative 2nd sg. (e.g., *j'ai trouve, *j'ai va, etc.). Both interpretations are plausible since there is evidence from our corpus as well as Grégoire (1968) that both of these forms are acquired before the past participle forms. Thus, like Grégoire's young native speakers, the immersion students proceeded to acquire first the past participles of the dominant verb group. They were also undoubtedly aided in this by the felicitous homophony of the past participle and infinitive of -er verbs, the latter form being acquired, again according to Grégoire and our own corpus, at an

early stage.

In contrast to the comparison students however, the immersion students were found to commit, as late as grade 6, a significant proportion of errors affecting the past participle of non -er verbs. This finding is consonant, on the one hand, with the fact that these verbs are in the minority and on the whole have past participles which are morphologically less predictable than those of -er verbs and, on the other hand, with the absence of homophony between their past participial and infinitival forms. That the immersion students are still making past participle errors in grade 6 is of interest since it means that after seven years of schooling in French they have not yet reached a level of grammatical proficiency comparable to that of grade 2 native learners of French. Other researchers (Beniak, Mougeon & Côté 1980; Canale, Mougeon & Beniak 1978; Harley and Swain 1978; Spilka 1976; etc.) arrived at similar results as regards other aspects of the grammatical proficiency of early French immersion students. One explanation for this is that the immersion schools provide lower levels of exposure to French and opportunities for use of French than the natural acquisition setting in which the native speakers learn their language from infancy. We would like to point out, however, that while such findings may be taken as an indication that immersion programs fail to foster native-like grammatical proficiency, a recently completed study (Lepicq 1980) reports that many of the errors committed by immersion students at the end of elementary school (especially morphological errors) are rated relatively high by native speakers on a scale of acceptability and intelligibility. Lepicq's findings therefore suggest that the immersion students' interlanguage, albeit deviant with respect to the target language, is nonetheless suitable for the purpose of communicating with native speakers of French.

In the remainder of this paper we wish to examine the results concerning the past participles of non -er verbs from each of the following language learning perspectives: (a) linguistic variability, (b) underlying sources of error, (c) changes in error source over time and (d) the psychological reality of linguistic descriptions.

4.1 Linguistic variability

We investigated the acquisition of each reflex of the past participle inflection and we did so as a function of the verb. We followed this verb by verb approach given that it had proved fruitful in two previous studies which we devoted to the acquisition of elements of French verbal morphology (Beniak, Mougeon and Côté 1980; Canale, Mougeon and Bélanger 1978). Through this approach we were able to show that the rate of acquisition of two morphemes (i.e., reflexive pronoun, auxiliary) varies considerably from one verb to another and that it is possible to account for this linguistic variability. The results displayed in Table

1 below reveal the same kind of variability, i.e., that there is internal variation in the rate of acquisition of each reflex of the past participle inflection. For example, within the category of past participles ending in [y], one finds lire which is the object of high proportions of past participle errors and voir which is the object of very few or no past participle errors. Another interesting finding of our analysis is the fact that we have identified several non -er verbs (faire, dire, voir and avoir) whose past participles are acquired ($\leq 10\%$ of errors being our acquisition threshold) as early as grade 2, just like the past participles of the -er verbs as reported earlier. These four verbs stand in sharp contrast to verbs like lire or mettre whose past participles are the object of higher than 10% of errors at all of the grade levels.

The above findings imply that it would have been invalid to establish an order of acquisition of the different reflexes of the past participle inflection on the basis of general percentages of error. Further in this connection, looking back on the morpheme order acquisition studies, the above findings also suggest that these studies' reliance on general percentages of error calculated for each one of the several morphemes which were examined may have hidden much in the way of interesting linguistic variability and therefore possibly led to morpheme rank orderings which were the artifact of these studies' methodology. Those familiar with sociolinguistics will have noticed the similarity between the methodology we have adopted and are advocating and the variationist approach to language use, which is slowly gaining wider application in the field of language learning research.³

We will not try in this study to account in a detailed fashion for the observed variation in the rates of acquisition of the past participles displayed in Table 1. Let us simply mention that it would appear that verb frequency in the students' linguistic input and production and whether the past participle is homophonous or not with a previously learned verb form are factors which have a bearing on rate of acquisition. For example, the fact that dire and faire are verbs whose past participles are homophonous with the present tense 1st, 2nd and 3rd sg. forms and are high frequency verbs may explain why the past participles dit and fait were the object of very few or no errors at each grade level. However, past participles such as vu and eu, which were also the object of very few or no errors in spite of the fact that they lack previously learned homophonous counterparts and are probably less frequent than fait and dit, are counterexamples which suggest that it is necessary to look for other explanatory factors.

Table 1: Percentages of error per past participle and grade level

Past participle	In-flection	Gr 2	Gr 3	Gr 4	Gr 5	Gr 6
dit	-∅	(12) ^a 0%	(16) 0%	(20) 0%	(14) 0%	(8) 0%
fait	-∅	(25) 4%	(34) 6%	(45) 2%	(46) 0%	(55) 2%
parti	-∅	(0) -	(1) - ^b	(4) 0%	(7) 0%	(11) 9%
pris	-∅	(4) 50%	(15) 27%	(20) 5%	(22) 0%	(9) 0%
fini	-∅	(6) 17%	(1) -	(3) -	(5) 20%	(5) 0%
mis	-∅	(5) 40%	(17) 24%	(13) 15%	(9) 11%	(4) 25%
dormi	-∅	(12) 75%	(6) 50%	(3) -	(2) -	(2) -
eu	-∅	(10) 0%	(10) 0%	(18) 6%	(8) 0%	(3) -
vu	-u	(6) 0%	(29) 3%	(37) 5%	(17) 0%	(6) 0%
venu	-u	(8) 37%	(7) 14%	(12) 25%	(12) 8%	(15) 7%
revenu	-u	(5) 60%	(9) 11%	(14) 50%	(12) 17%	(31) 0%
bu	-u	(0) -	(0) -	(0) -	(0) -	(4) 0%
lu	-u	(4) 75%	(1) -	(1) -	(5) 40%	(7) 43%
été	-é	(1) -	(0) -	(3) -	(1) -	(4) 0%

^a The numbers in parentheses indicate total number (N) of correct and incorrect past participles.

^b We calculated error percentages only when N was ≥ 4 .

4.2 Underlying sources of error

Taylor (1975) has argued that language learning errors can be attributed to the reliance by learners on previously acquired forms to compensate for a lack of knowledge of the correct forms. Thus we expected some proportion of the past participle errors committed by the immersion students to reflect this strategy. Specifically, we expected substitutions of present tense 1st, 2nd, 3rd sg. and 3rd pl., imperative 2nd sg. and infinitival forms for the past participle since, as stated earlier, these forms are acquired before the compound past forms by native as well as L2 learners. Our expectations were borne out. Out of the total number of errors (92) committed by the immersion students in grades 2 to 6 with respect to the formation of the past participle of non -er verbs, 51% reflected the above-mentioned strategy. In fact, reliance on the infinitive (e.g., **j'ai prendre*, **il a avoir*, etc.) was the single most productive strategy, accounting alone for 36% of the past participle errors. Reliance on the above-mentioned present tense or imperative forms (e.g., **tu as [me]*; **tu es [vjɛ]*, etc.) accounted for 15% of the past participle errors and was the least productive strategy. A possible reason for the immersion students heavier reliance on the infinitive than on the present or imperative may be the homophony which characterizes the infinitive and past participle of the dominant -er verbs. Such homophony may have been noticed by the immersion students, used as a strategy for the formation of the past participle of -er verbs and applied to the formation of the past participle of non -er verbs.⁴

Given the great predominance of -er verbs in French, we also expected that our data would evidence attempts on the part of the immersion students to form the past participle of non -er verbs as they would that of -er verbs (i.e., use an [e] ending). Errors of the type **il a [vœnɛ]*, **j'ai [mɛtɛ]*, etc., which represented 28% of the total number of past participle errors, are a confirmation of this hypothesis. Although these errors are analogical in nature, there are several ways in which the process of analogy may be operating as we shall argue in the last section of this paper. In any case, it should be pointed out that, unlike the first type of error examined above, such analogical errors constitute evidence that the learners are coming to grips with the morphology of the past participle.

There is one other type of past participle error which the students committed. These were errors like **il a ouvri/reveni*, **j'ai prenu/moru*, etc. They accounted for the remaining 21% of the past participle errors of non -er verbs. This type of error was not attested by Harley and Swain (1978) in the French of Toronto immersion students nor was it attested by Grégoire in the speech of his two young native speakers. We find this error-type interesting because it evidences the fact that the past participles of non -er verbs can also serve as the basis for the creation

of analogical past participles within that class of verbs. It is also noteworthy that the inflections of the past participles of non -er verbs were not used to form the past participle of -er verbs, i.e., we did not observe cases such as *j'ai chantu or *il a trouvi, etc. This is probably due to the regularity of the morphology of the -er verb past participles and to the fact that the non -er verbs, being in the minority, cannot serve as the basis for the creation of analogical past participles outside their own class.

In our discussion of the underlying sources of past participle errors we have so far not considered the possible role of mother tongue interference. Dumas, Selinker and Swain (1973) have made the general observation that interference is one of the major sources of error in the speech of French immersion students. We would like to see whether this observation applies in the case of past participle formation.

It has been reported that inflectional morphology doesn't lend itself to borrowing (Weinreich 1968). Consonant with this finding, there were no inflectional borrowings in the speech of the immersion students, that is, we found no examples where they had coupled one of the English allomorphs of the past participle inflection to a French verb stem (e.g., *sauted ~ sauté, *vend ~ venu, *frapped ~ frappé, etc.). One possible explanation for this lack of transferability is the relationship of dependence which inflections hold vis-à-vis stems. In other words, inflections are not perceived by learners or speakers (contact situation) as items which are free and therefore transferable. Cases of language switch such as j'ai 'opened' la porte for j'ai ouvert la porte, found occasionally in our corpus and in that of other researchers, are not counter-examples but rather constitute further supporting evidence for our claim that inflections are dependent on stems and for the observation that the inflections of a given language are rarely, if ever, integrated into the morphology of another language.⁵

Another potential case of interference might follow from the fact that the past participle of a good number of English verbs is homophonous with the simple past form (e.g., he stopped ~ he has stopped, I stood ~ I have stood, etc.). If native speakers of English are able to perceive this generalized homophony, perhaps they can transfer this correspondence to the learning of French past participles. Such transfer would be negative as it would yield errors like *il a [finis], *j'ai [ave], etc. The spoken French of the immersion students contained no such errors and therefore we conclude that such negative transfer did not take place.

We would like to take up briefly now the question of possible positive transfer from English. Like French, English has past participles which can be broken down morphologically into a stem

plus a suffix, i.e., one of the allomorphs of the past participle inflection. This crosslinguistic similarity in the morphology of past participles can only be of help to the immersion students. Because of this similarity, the immersion students do not have to discover the morphology (i.e., stem + suffix) of past participles in French. In addition, neither do they have to discover the syntax (i.e., auxiliary + past participle) of the compound past. In this sense the immersion students enjoy a headstart on the native learner of French and might also enjoy a headstart on L2 learners whose mother tongue lacks past participles, an hypothesis which could be empirically tested.

4.3 Changes in error source over time

In two studies of the acquisition of English as a second or third language, Taylor (1975) and Lococo (1976) showed that the proportion of learner errors attributable to interference and overgeneralization varied over time in a nonrandom fashion. More specifically, the proportion of intersystemic errors decreased and that of intrasystemic errors increased as acquisition progressed from the early to the intermediate stages. Given the cross-sectional nature of our study, we thought it would be of interest to investigate whether the two intralingual sources of past participle errors that we have identified could be predicted to change in importance over time and, if so, whether there was indeed a change.

We have indicated in the previous section that overgeneralization of certain forms of the infinitive or present/imperative is indicative of ignorance of the morphology of the past participle. As such, it is reasonable to assume that this strategy should be more characteristic of the interlanguage of the younger students than of that of the older ones. Alternatively, the analogical errors evidencing the students' coming to grips with the morphology of the past participle should be expected to be more characteristic of the approximative system of the older students than of that of the younger ones.

A look at Table 2 indicates that these expectations are largely borne out. We can see that at the Grade 2 and 3 levels the percentage of errors due to overgeneralization of the infinitive or present/imperative accounts for a greater proportion of errors than do the other two sources of error combined. From grade 4 on however, errors showing that the students are coping with the morphology of the past participles are proportionately more frequent than those resulting from overgeneralization of non-participial verb forms.

Table 2: Change in the contribution of error sources by grade levels.

Grade	Analogy with PP of -er verbs	Overgeneralization of Infinitive or Present/Imperative	Analogy with PP of non -er verbs
2	(6) ^a 21%	15 52	8 27
3	(3) 14%	13 62	5 24
4	9 41	10 45	3 14
5	4 50	3 38	1 12
6	4 33	5 42	3 25

a Number of incorrect past participles.

The findings of the present study and those of Taylor and Lococo suggest that in instances where there are several competing sources of L2 errors, the search for changes in the contribution of each error source over time is revealing, whether it is done for one class of items (as in the present study) or for the whole target language (as in the case of Taylor and Lococo's studies). However we feel that from a methodological standpoint, such a search is best undertaken separately for each class of target language items (e.g., prepositions, auxiliaries, etc.) under investigation. On the one hand, this discrete rather than general approach renders possible the identification and exclusion of those classes of target language items which give rise to errors which are attributable to only one underlying cause. On the other hand, only the discrete approach can reveal whether the contribution of a given error source necessarily shows the same evolution over time across different classes of target language items, an assumption which seems to be implicit in the general approach.

4.4 The psychological reality of linguistic descriptions

One of the aims of psycholinguistics has been the experimental verification of some of the abstract constructs posited by linguists (e.g., transformational rules, word derivation processes, phonemes, etc.) in their analyses of various languages.

In the particular area of morphology, Derwing and Baker (1977) designed an experiment to test which one, if any, of the several alternative analyses which have been proposed for plural formation in English, had in their words "an empirically defensible claim to psychological reality". Similarly, in this section we would like to attempt to test the "psychological reality" of Martinet's morphological analysis of past participle formation in French. Our testing ground will be the past participle errors committed by the immersion students.

The errors which involve use of a nonparticipial form are excluded here since they do not enlighten us on the issue at hand. As concerns the analogical past participles ending in [e], let us examine how the process of analogy which underlies them might be working. On the one hand, one may suppose that the students have isolated, on the basis of the past participles of -er verbs (which they master very early), the invariant ending [e], that they have also isolated some stems of non -er verbs on the basis of certain familiar tenses (e.g., nous ven-ons, vous ven-ez, je ven-ais) and that they are affixing the ending [e] to such stems (e.g., *il a ven-[e]) by analogy with the past participles of the majority -er verbs. On the other hand, the analogical past participles ending in [e] may also be interpreted as substitutions of previously learned simple verb forms ending in [e] (e.g., 2nd. pl. present or imperative). This type of analogy would seem to be based on rhyme, i.e., the form ven-[e] (2nd pl. present or imperative) rhymes with the past participle of any -er verb and is therefore a prime candidate for use as a past participle of venir in the absence of knowledge of venu. Note that although this rhyming analogy operates at a word level, it involves the perception of a particular word ending: [e].

Turning to the analogical past participles not ending in [e], it is obvious that they cannot be the result of rhyming analogy as forms like *reveni, *prenu, etc. do not have any homophonous counterparts in French. We are left therefore with an explanation resting on analogy operating at a morphemic level, i.e., involving isolation of an ending and a stem and affixing of one to the other. It is clear that in the case of analogical past participles such as *prenu, [y] is the ending which has been isolated and affixed to the stem pren-. Matters are less clear, however, in the case of analogical past participles ending in [i]. Two formation strategies might be invoked, one which involves isolation of the stem reveni- and affixation of a $\emptyset$ ending to it, the other which involves isolation of the stem reven- and affixation of an [i] ending. We believe that the second strategy is more plausible since as Slobin (1977) has observed, learners tend to avoid $\emptyset$ morphemes. Finally, one could also argue that the analogical past participles ending in [i] are the result of a heuristic of the type 'Drop the -r of the infinitive'. This heuristic could result from an analogy of the form revenir: *reveni on the basis of partir: parti, finir: fini, sortir: sorti, etc.

In conclusion, the discussion above has shown that learners of French evidence the capacity to form analogical past participles by combining stems and endings, by relying on rhyming analogy or by resorting to a heuristic of some kind. Further, it has shown that when a morphological strategy is being followed, the endings selected by the learners need not correspond to those posited by Martinet (1969). Whether learners and speakers, for that matter, follow morphological rules when they produce correct past participle forms is another question. We leave it to future empirical research.

Notes

1. In such programs Anglophone students are schooled entirely or partially in French. Immersion programs were set up to bring about higher levels of French language proficiency than those attained by students enrolled in the traditional core French programs.
2. Although in such contexts the students primarily used compound past forms, they also used simple verb forms. These simple verb forms resembled the present, the infinitive or the imparfait and probably reflect the immersion students' unfamiliarity with the compound past. Interference from the rules of tense usage in English may be at the root of the use of the imparfait in this way (e.g., he said good-bye → *il disait au revoir). These errors were excluded from the present study since they do not bear on the question of past participle formation.
3. Sociolinguistic theory is not only equipped to tackle the problem of linguistic variability but that of interindividual variability as well (via the use of implicational scales for instance). Two recent studies in the literature on second language learning (Hyltensham 1977; Andersen 1978) go a long way toward extending sociolinguistic theory to the solution of the latter problem. In the case of the present study, the data base was too sparse to permit any meaningful study of the acquisition the past participle inflection on an individual basis.
4. It is true that the past participle of some very frequent non -er verbs (i.e., faire, dire) is homophonous with some present or imperative forms. However, this homophony is characteristic of only a few verbs in French and therefore it may not be sufficient to induce learners to rely as heavily on the present tense/imperative overgeneralization as on the overgeneralization of the infinitive in forming the past participles of non -er verbs.
5. Verb stems, however, can be borrowed as evidenced in our corpus as well as in that of Harley and Swain (e.g., j'ai baké un gâteau). Such forms show that in contrast to inflections (bound morphemes), verb stems are free morphemes and therefore transferable.

6. It might also be the case that these erroneous past participles are substitutions of a form of the imparfait (i.e., 1st, 2nd, 3rd sg. or 3rd pl.) which certain speakers pronounce with the ending [e] rather than the prescribed [ɛ].

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THE PASSIVE BILINGUAL AND "FOREIGNER TALK"

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1. INTRODUCTION

Charles Ferguson's pioneering work on simplified registers has inspired the present case study of spoken and written communication between a native English-speaking adult female who is also a passive bilingual in Lithuanian, and her East High Lithuanian-L₁ (Senn 1944, 1966) mother who speaks and writes to the daughter by means of the interlingual improvisation exemplified in Appendix III. For the daughter, the mother's improvisation necessitates both a creative receiver-ship and response and also--most obviously on occasions of code switching--a passive command of Lithuanian.

According to one framework for definition, the mother's improvisation might be classified as a second language learner's pidginized English, in that it seems to display the three well-known processes of pidginization, namely, "reduction or simplification in form, hybridization, and restriction of use or function" (Smith 1972: 50). However, to focus on issues that can be managed within the scope of this paper, I will bracket the vexed taxonomic and typological issues attendant on the various analytical uses of the pidginization concept, and, instead, safely refer to the mother's improvisation simply as "broken language" (BL).

Here, I wish to concentrate on some issues raised when Ferguson's model of "simplified register" is applied to texts produced by the daughter in response to her mother's BL. Those texts constitute "foreigner talk" (FT).

The concept "register" is easier to exemplify than to define, but in 1977, perpetuating his position of 1975, Ferguson had spoken of it in relatively static terms as follows (Ferguson 1977: 212):

A register in a given language and given speech community is defined by the uses for which it is appropriate and by a set of structural features which differentiate it

from the other registers in the total repertory of the community.

Among the family of reduced or "simplified" registers was FT, i.e., "the 'foreigner talk' addressed to foreigners who do not know one's language" (1977: 212).

However, also in 1977, there appeared another article, this one by Ferguson and DeBose, which marked a noteworthy shift in viewpoint from the static to an interactional framework for simplified registers. Now, among other hypotheses, it was suggested that "foreigner talk represents in part the native speaker's attempt to approximate some notion of broken language" (1977: 116). Carefully planned empirical studies would be needed, it was said, to elucidate how. Finally, some very high expectations were explicitly stated for the new enriched model of simplified register (1977: 117):

Such hypotheses would be expected to fit into a more inclusive framework of communicative competence. Part of communicative competence ...is the ability of incipient speakers of a language to make themselves understood in a language of which they know mainly a reduced set of basic vocabulary items. So too is the ability of mature speakers to reduce and modify the structure of their linguistic output to a level and form deemed appropriate to the lower level of proficiency of their foreign interlocutors. Finally, the ability...to interpret the variously simplified versions of a lingua franca and to adjust their own productions in accordance with the input is a component of communicative competence.

It is possible that these high expectations had been fed by "the most encouraging line of research...the interactional study of first language acquisition" (Ferguson and DeBose 1977: 117), including attention to the "baby talk" which is Ferguson's example par excellence of a simplified register. However, to this date I know of no published BL/FT interaction study which provides direct verification of exactly how a FT speaker achieves his approximation of BL features. The same lack of empirical study was noted by Ferguson and DeBose (1977: 116) regarding the common assumption that BL in a speech community is significantly affected by locally available FT models (cf. Bender et al. 1972; Clyne 1968; Heidelberger Forschungsprojekt 1978: 18).

Ultimately, if Ferguson and DeBose are correct

(1977: 117-121) that there is an interaction of FT and BL through a common process that under certain socio-linguistic conditions results in the formation of pidgins, then--to hark back to that which has been bracketed above--our present study might converge on broad theoretical and historical issues involved in the pidginization concept. For the time being, there are enough hidden complexities in the model of simplified register itself, in the actual performance of FT, and in the mutual reconciliation of the two, to keep us busy.

2. ANALYSIS OF FT TEXTS

The first analytical problem for this case study was the coding problem of what features to regard as diagnostic for FT. The texts chosen to help solve this problem were samples of written expression taken from topically comparable letters written by our subject to her mother and to her English-L₁ mother-in-law on the same day (Appendix I.A and I.B). The choice of texts was not arbitrary, as their subject matter happened to coincide with the subject matter of part of a telephone call spoken by our subject to her mother (Appendix II.B), and thus enabled a certain comparison of written and spoken discourse.

According to the most recent available enumeration of features diagnostic for FT (Ferguson and DeBose 1977: 104):

FT features that are probably widespread although not yet sufficiently documented to make such a claim with assurance include the following: slow, exaggerated enunciation; greater overall loudness; use of full forms instead of contractions; short sentences; parataxis (pure or with adverbial connectives such as maybe, bye-and-bye); repetition of words; analytic paraphrases of lexical items and certain constructions; reduction of inflections (often by the selection of one or two all-purpose forms, e.g., me for I, my, mine, me in English, infinitive for all non-past verb forms in Italian, die for all forms of the definite article in German); lack of function words (e.g., articles, prepositions, auxiliaries); use of feedback devices such as invariable tag questions; avoidance of strongly dialect or slang forms in favor of more standard forms; limited number of pho-

nological simplifications (e.g., occasional addition of vowel to final consonants in English, b for p in Italian); special lexicon of quantifiers, intensifiers, and modal particles used in constructions not matching 'normal' language; use of foreign or foreign-sounding words (e.g., English savvy).

This full range of diagnostic features did not occur for the present study either in Appendix I.B or in Appendix II.B, due probably partly to the restricted nature of the sample and perhaps to my textual method itself. At the same time, though, Ferguson's (1975) elicitation techniques of (a) asking university students "how speakers of English trying to communicate with apparently uneducated non-Europeans would say [10 elicitation sentences]," and (b) collecting examples of FT from published linguistic and literary accounts, might be expected to fill out paradigmatic lists of FT features but fail to provide information on actual frequency of occurrence of any given feature. Frequency data would likewise be lacking for the broad functional categories into which Ferguson and DeBose grouped the diagnostic traits, to wit, categories such as simplifying, clarifying, and expressive of speaker's affect or attitude toward the addressee. In such a circumstance, of course, one would have no reason positively to expect that all the diagnostic features would occur in any given corpus of texts.

On the other hand, it did seem to me only logical to assume that a register belonging to a set labeled "simplified" should in the first instance, at least, plainly display "simplification" as its root paradigmatic feature. Accordingly, it became convenient to refer for coding purposes to the "universals of lexical simplification" generated by Blum and Levenston via a noninteractional and nonsociolinguistic model associated with an argument that "simplification, whatever the context in which it occurs, operates according to universal principles...that derive from the individual's semantic competence in his mother-tongue" (1978: 399). If any of their criteria of simplification turned up in our FT data as interactionally derived, then that fact could not be laid to any preselection of criteria by the present analyst. The act of applying Blum's and Levenston's criteria to the data in Appendixes I.A and I.B--as also of applying one criterion of "(clausal) repetition" added by me--yielded the twelve examples of lexical "simplification" presented in Table 1.

At this initial stage in coding, I did not distin-

Table 1
 LEXICAL "SIMPLIFICATIONS" FROM TEXTS I.A AND I.B

No.	Non-FT	→	FT
1	biggest news	→	very big news
2	to Calgary	→	here in Calgary
3	a year or so	→	a whole year
4	has leave	→	has a leave of absence from teaching
5	help us with that research	→	help Bill and me on the Massey research
6	put her up	→	give her the use of one of the three upstairs rooms
7	food-science courses	→	courses in Food Science
8	taking leave	→	taking long leave
9	weekdays	→	most of every day
10	help us with that research	→	helpful to our work in different ways
11	both extremely fond	→	all three of us are happy
12	to have her...like family	→	it works out that all three of us are happy with this arrangement

guish between simplifying and clarifying processes, such as the diagnostic lists Ferguson provides for the two processes do, excepting as they overlap (see Ferguson and DeBose 1977: 105-106 for a FT example of overlapping, in the form of reduction of German definite articles). Both to make myself clear, and to misrepresent Ferguson's position as little as possible, let me quote him on the relevant distinction. The context is his article on baby talk as a simplified register, in the volume he coedited with C.E. Snow on Talking to Children (1977:212-213):

The processes which derive simplified registers from adult speech (AS) are not always simplifying in nature. Some processes are clarifying in that they modify in the direction of greater redundancy, often by adding material to the model. Sentences may be pro-

nounced more slowly and articulated more carefully; vowels normally reduced or elided may be supplied; words, phrases or whole sentences may be repeated; ambiguous words or near homophones may be replaced by synonyms; everything may be uttered more loudly; ambiguous constructions may be paraphrased. Such clarifying processes are part of the competence of all users of language and occur outside of simplified registers.

However, to examine Table 1 closely is to note that fully three-quarters of the examples of simplification therein (all the items except nos. 9, 10, and 12) amount to what Ferguson called "analytic paraphrase," which I take to be equivalent to Blum's and Levenston's "circumlocution," i.e., "The translation of a high-level word by a descriptive phrase...[which] From a semantic point of view...is the separate specification of component features" (1978: 411). Analytic paraphrase appears among the FT diagnostic features of Ferguson and DeBose (1977: 104); it is, of course, a well-known device of pidgin languages, whose speakers have to make do with reduced stocks of vocabulary items (Smith 1972: 52); and I understand it to appear also among Ferguson's just-quoted "clarifying" processes in that "ambiguous constructions may be paraphrased." Thus if analytic paraphrase is both simplifying and also clarifying--and let it be underscored that the last sentence in the quotation from Ferguson does not apply to analytic paraphrase precisely because it is diagnostic for the FT simplified register--then, for 75% of my examples, either simplification/clarification turns out to be a unitary process; or, multiple functions can be served by the same semantic processes; or, there is some kind of as yet unresolvable ambiguity in the criteria for simplification which I have applied to my data.

As for the remaining three items in Table 1, those constitute examples of approximation (item 9), repetition (item 10, as repetitive of item 5), and transfer (item 12), and appear to share an interactional basis at least.

Approximation is a cognitive strategy that works directly through experiences shared with another, and occurs to all of us when memory loss strikes but our addressee is a familiar speech partner and can be presupposed to be able to recover an intended lexical item for us. A colorful example of the phenomenon turned up in a recent letter to our FT-speaker from her mother,

in which the fruits of their having jointly planted a few pumpkin seeds in the mother's garden were reported to consist now of one large "Halloween"--i.e., pumpkin--in the garden. Although Ferguson and DeBose do not list approximation as diagnostic of FT, I follow Blum and Levenston in classing it as a case of simplification. I also find it interesting that one can have simplification without its occurring within a simplified register, and that this kind of simplification should more clearly result from interaction than is true of any case of analytic paraphrase.

Regarding repetition, that was no part of Blum's and Levenston's simplification universals in the first place. Though I consider repetition to be mainly clarifying, I added it to Blum's and Levenston's list because I share Shuy and Larkin's view that repetition contributes to (a conjoined) clarification/simplification in adult discourse depending on when, what, and how language is repeated (1978: 311).

Finally, I treat language switching and "transfer" as the same process, with the addendum that transfer must give rise to "appropriate second-language morphology and phonology" (Blum and Levenston 1978: 410). For example, when our subject was confronted with her FT sentence, "it works out that all three of us are happy with this arrangement" (Table 1, item 12, col. 3), she promptly back-translated to the Lithuanian structural model she had unconsciously used to produce it, starting with Lith. pasidare, "came to pass," for the Engl. "works out." Appendix II.B, a fragment from a tape-recorded telephone conversation that occurred after the letter of Appendix I.B was mailed but before it had reached, shows another example of unconscious transfer in a FT text, namely, of a Lithuanian linguistic (or prelinguistic--cf. Mehler and Bertoncini 1979) intonational system. Text II.A was simulated by the subject imagining her addressee to be a certain friend of many years standing and then reading a written version of text II.B into the tape recorder. In due course, when recordings of both texts were played back to our subject, her reaction was a marveling, "I sing an altogether different tune to Mom!" In the context of FT, the transfer phenomenon strikes me provisionally as expressive of affect (see further Brown 1977: 6-7; Ferguson 1977: 213; Ferguson and DeBose 1977: 106).

In sum, of the twelve items in Table 1, ten appear to be jointly simplifying and clarifying (i.e., the nine cases of analytic paraphrase, and the one case of repetition), one is simplifying (approximation), and

one is expressive of affect (transfer). None is merely clarifying.

3. CONCLUSION

The object of this paper was to apply Ferguson's model of "simplified register" to FT texts, but the process of doing so has yielded the unexpected insight that one simplified register is not necessarily functionally closely akin to another simplified register. To be exact, it seems that Ferguson's approach--culminating in enumerating an array of diagnostic traits and a wide range of functions--depends so much from baby-talk research that of itself it is insufficiently sensitive to concerns of FT-speaking adults. Our operational borrowing of Blum's and Levenston's universals, which derive from adult language, helped make this clear.

The fact is that ten out of twelve of our examples are simplifications/clarifications just to get the job of messaging done with whatever aids are at hand.

Therefore, without derogating Ferguson's excellent work in the slightest, it still must be concluded that the object of FT performance--as contrasted with that of baby talk--is a much more singleminded preoccupation with communicative efficiency.

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Appendix I
LETTER FRAGMENTS OVER SAME SUBJECT
IN NON-FT VS. FT (TO LITHUANIAN SPEAKER)

A: NON-FT

Then, the biggest news of all, it seems that our friend Valerie Soo will be coming to Calgary this September, to stay with us in our house for possibly a year or so. As you know, Bill has leave starting January 1st, to do research on Masseys, and Valerie herself is a Massey. So she will help us with that research, and we will put her up here, while she spends weekdays taking food-science courses at our local institute of technology. Nice for all of us, all round. Valerie's taking leave from her job in Bingo to do this. Valerie has been my close friend for almost 30 years now; Bill too has known her for many many years, and in fact she was his research assistant back in 1963 when Bill and I spent that year in Dvasi and Dose cities, Middle State. We are both extremely fond of Valerie; she's an extremely decent human being. It'll be really nice to have her here. Like family.

B: FT

The other very big news here is that Valerie Soo will probably be here in Calgary as of September, and will be living with us for as long as she's here and wants to live with us. She is taking a long leave from her job in Bingo, and will be taking courses in Food Science at a technology institute here in Calgary. So she may be here as long as a whole year. We are going to give her the use of one of the three upstairs rooms (that small-ish bedroom, which I use as a sewing room), and she can have that for her combined bedroom and study. Otherwise, she'll be at her institute most of every day, I suppose. On weekends, she will be glad to help Bill and me on the Massey research. As you remember, Bill too has a leave of absence from teaching, starting January 1st, and at that time he and I will collaborate on Massey research. Valerie herself is a Massey, of course, so she can be helpful to our work in different ways. It works out that all three of us are happy with this arrangement.

Appendix II.A
 SAMPLE OF SUBJECT'S NON-FT INTONATION IN ENGLISH
 (SIMULATED FOR SAME TEXT AS IN II.B)

Hello Mom I forgot to tell you one thing We are
 going to have company Do you remember Valerie Soo
 That little Asian girl She is gonna come to Calgary
 to go to school here at a university an she's gonna
 stay with us So she's gonna come in September or so
 An she's gonna have ah we're gonna give her that room
 in the the upstairs there the one where I have the sew-
 ing machine you remember An we're gonna put a bed in
 there an she can have that room an a desk she can jas
 live there an then she goes off to her school every day
 An so that's gonna be kinda nice so she's gonna be here
 about Well I spose for a year or something So
 that's really gonna be nice becuzza She's a very good
 friend you know [OTHER TURN] That's right That's
 exactly right with three of us living here it makes
 things a lot simpler that way so we're really....

Appendix II.B
 SAMPLE OF F₁ INTONATION IN ENGLISH
 (TRANSFER FROM LITHUANIAN; TOPIC SAME AS IN I)

Hello Mom I forgot to tell you one thing We are
 going to have company Do you remember Valerie Soo
 That little Asian girl She is gonna come to Calgary
 to go to school here at a university an she's gonna
 stay with us So she's gonna come in September or so
 An she's gonna have ah we're gonna give her that room
 in the the upstairs there the one where I have the sew-
 ing machine you remember An we're gonna put a bed in
 there an she can have that room an a desk she can jas
 live there an then she goes off to her school everyday
 An so that's gonna be kinda nice so she's gonna be here
 about Well I spose for a year or something So
 that's really gonna be nice becuzza She's a very good
 friend you know [OTHER TURN] That's right That's
 exactly right with three of us living here it makes
 things a lot simpler that way so we're really....

Appendix III
LETTER FRAGMENT IN ENGLISH BL
(LITHUANIAN SPEAKER)

...its to worme to cook in the house. is mach easser
in the Dining Rum. with ollder Pipple to have lanch-
es and to spend the thyme with Pipple that we know.

will may Dears that abouth all so far so good
one waiting chaiche in the wether. more raine less
hit. its to worm sam plaisses lots Pipple daide in a
eatt. its noth so good filing abouttet. to know that
whats going ann.

CAN THERE BE A MODEL-NEUTRAL TEXTBOOK?

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Is it possible to write a grammar of a natural language or an introductory morphology-syntax textbook which is not model specific? Is it possible to successfully de-emphasize technical jargon and theory-specific notation?

These questions have come to mind for two reasons: first, the present lack of consensus in the linguistic world; second, because Ben Elson and I are attempting a revision of our 1962 morphology-syntax textbook in the midst of this confusing climate. I think the answer to the first question (Is a model-neutral grammar a possibility?) is "probably not"; and to the second question (regarding de-emphasis of technical jargon) "Probably yes". I would like to discuss the problems with you and get your reactions to them.

But first, permit me to give a little personal history, to lead into the subject of what I have referred to as the "present lack of consensus" and the subject of our textbook-writing problems. Elson and I began our study of syntax in the era of structural IC analysis, when every construction had to be divided into two parts. For accomplishing the proper divisions, the accepted process was to apply a mechanical procedure, being careful not to depend too much on the meanings of the forms. For our beginning classes in the Summer Institute of Linguistics, in order to help students divorce their analysis from the influence of meaning, we even reached the extreme of using problems with only squares and circles as syntactic constituents. A sample of such problems can be seen in 1. The assignment was to find the ICs by a study of the constituent inventory and distribution.

1. 1) ☐ ☐
- 2) ☐ ☐ ☐
- 3) ☐ ☐ ☐ ☐
- 4) ☐

Then came Kenneth Pike's tagmemics, with meaningful grammatical functions (subjects, objects, predicates, locationals, phrase nuclei and modifiers, etc.) which were not necessarily in a binary arrangement. This was a real boost to the morale of those of us working on the analysis of Indian languages, especially those languages with V-S-O order (which, in a binary system, had a discontinuous

predicate). It completely revolutionized our own analytic work and our teaching of beginning students. Now we could actually DO syntactic analysis and teach it to beginning students with some measure of confidence.

But as yet there was no textbook to tell students how to go about it. We needed such a book for our courses at SIL, since we train hundreds of students to find the grammatical structure of unwritten languages.

After two provisional textbooks each and one co-authored, in 1962 we published a somewhat more definitive how-to-do-it book, using the original Pike tagmemic model, with the addition of the discrete-level hierarchy introduced by Robert Longacre. Other duties have kept us from getting to a revision of that book until recently.

Meanwhile, a large number of introductory textbooks have been published, most of them presenting some form of generative-transformational grammar. Many deal primarily with English structure or with a general introduction to the nature of language and language change. Very few are planned for introducing students with no linguistic background to the intricacies of analyzing an unwritten language. So we have felt the need to revise our old book.

But then the question arose as to what approach to take. In the late 70s we found a different climate in the world of morphology and syntax study--different from that of the 50s when we first began, but also different from that of the 60s and early 70s. It is a climate of rejection of certain theoretical assumptions accompanied by a wide variety of attempts to find the right replacement. And it is a climate of interest in data from many languages in order to identify true language universals. In order for such data to be available to linguists from various backgrounds, there seems to be a need for descriptions written in some kind of "reference grammar" form which can be understood by everyone.

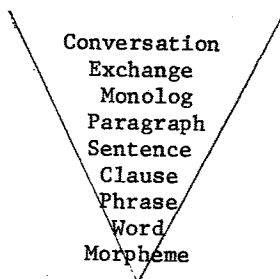
In light of this climate, we felt the need of training students to look for the kinds of data linguists are interested in and to describe them in a form more readily understood by a wide spectrum of readers.

However, the effort to write a textbook with this purpose in mind has raised the big question--CAN there be such a thing as a model-neutral description? I have read various so-called "reference grammars" and a potential outline for such a grammar, and I find in them various clear signs of the writers' background in the TG framework. Other such reference grammars are written under the influence of the traditional grammars of the national language of the country, e.g. Spanish. On the other hand, our efforts at presentation of material in the textbook and in a sample reference grammar showed strong traces of our tagmemic background. Is it possible to find an approach which can somehow combine quite different approaches, one that will make it possible for readers from all camps to understand and benefit from the language data described?

Let me illustrate some of the problems by mentioning certain language structures which are treated quite differently by different models of grammar. The problems result mainly from the fact

that tagmemics makes a basic distinction between CLAUSE and SENTENCE. Clause is defined by its internal structure of subject, predicate (the verb or a nominal predicate), objects, and various adverbials. Sentence, on the other hand, is equivalent to an independent clause, but also includes combinations of clauses (analyzed by the meaningful relationship between them); fragments of clauses in conversations (dependent sentences); and clauses plus various peripheral elements such as topics, vocatives, tag questions, introductory connection words or phrases, etc. Hence clauses and sentences are treated as different kinds of constructions and are considered as two levels in a part/whole-relationship hierarchy, as shown in 2.

2.



Both traditional grammars and the TG model, on the other hand, tend to equate clause and sentence except for occasional references to subordinate clauses and combinations of clauses in coordinate sentences. These differences of approach result in quite different organizations of data in grammatical descriptions and cause immense problems in trying to write a model-neutral grammar.

First, the problem of subordinate clauses. In a tagmemic description, the structures of subordinate clauses of various types would presumably all be described in one section, under the rubric "subordinate clauses" or "dependent clauses," with subsections according to their specific internal structure. Then they would be mentioned again in various places in the grammar according to their distribution or external function. Relative clauses, for example, would be mentioned at phrase level, since they form part of a noun phrase. "Sentence complement" clauses would be mentioned at clause level, since they manifest the subject or object of a clause. On the other hand, clauses which function together with other clauses in relationships such as cause-effect, condition-contingency, etc. would be treated at sentence level. This seems to us to be a very logical, consistent approach, and hence we built the textbook chapters around this model.

Certain types of dependent clauses, however, have a more uncertain status, e.g. temporal and locational clauses. In sentences like "He works where his father does," the subordinate clause substitutes for locational adverbs or phrases such as "there" or "in his father's store," manifesting a clause-level function of location. Likewise in such sentences as "Make hay while the sun shines", the clause substitutes for time words or phrases and hence

3. Paragraph:

Sentence 2: When they arrived, they found the house in

Questions are a second class of constructions often described in different ways. Frequently, traditional grammars and reference grammars with TG background treat all questions in one section, describing each of the types in turn: yes-no questions, information questions ("WH questions" in TG terminology), and indirect questions. In tagmemics, questions of various types might well appear in various parts of the grammar, depending on their internal

a general way. But one teacher of TG persuasion found it difficult to go from the concept of different types of clauses to the concept of an ordered list of transformations. As yet we do not know if there are other negative factors inherent in the presentation, since the preliminary versions have been used in very limited circumstances.

We are, however, aware of one further problem--the question of notation in describing constructions. Formulas inevitably reflect a specific model and are understood well only by in-group readers. But is a prose description sufficient for the reader to grasp the structure of a language? If not, what kind of notation can be understood by everyone? Thus far, we have resorted to very simple formulas for the description of constituent order in clauses, using only function names, as in 10. These are accompanied by prose explanations, and only prose is employed for other levels.

10. S P O (M) (T) (L)

Complicated word structures in polysynthetic languages are indicated by charts of the order of affixes, as in 11.

11. ... -3 -2 -1 Root +1 +2 +3 ...

An alternative formulation, not as yet included in the book, is that illustrated in 12., using function labels for clauses but only class labels for lower levels. The format given is more like the TG phrase structure symbolization than a typical tagmemic formula: arrows in place of the = sign, parentheses for optional constituents rather than the + symbols, and braces to indicate an either/or choice. Certain other features, however, do not fit the TG usage.

12. Clause $\longrightarrow$ S P O (M) (T) (L)

$$\left\{ \begin{array}{c} S \\ O \end{array} \right\} \longrightarrow \left\{ \begin{array}{c} NP \\ Pro \end{array} \right\}$$

NP $\longrightarrow$ (Dem) N (DesAdj)

P $\longrightarrow$ (Aux) V

T $\longrightarrow$ TAdv

L $\longrightarrow$ $\left\{ \begin{array}{c} LAdv \\ PrepPhrase \end{array} \right\}$

M $\longrightarrow$ M Adv

The purpose of this paper has been three-fold: 1. to let you know we are making the attempt to write a textbook which is as model-neutral as possible; 2. to express some of the frustrations encountered in the attempt; 3. to ask for opinions and suggestions to help in completing the project.

(A preliminary publication of the book is available through Summer Institute of Linguistics, 7500 W. Camp Wisdom Rd. Dallas TX 75236. Comments will be gladly received at Apdo. 22067, Mexico 22, D.F., Mexico.)

LANGUAGE ACQUISITION HEURISTICS

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Language Acquisition Heuristics are in essence sets of instructions given to language learners as to how to learn language. They are designed to assist learners in developing mental sets appropriate for efficient acquisition of linguistic and cultural information. The concept of the LAH, as first proposed in Acton(1980), was an attempt to clarify the relationship between teaching the content of a foreign language as opposed to teaching the process of acquiring that language. A basic argument there was that since we are constantly teaching students how to learn language-- albeit unconsciously most of the time-- we should attempt to gain conscious control over those teacher-behaviors to ensure that the strategies "taught" are the most effective and productive. Although this expansion of the framework outlined in Acton (1980) is confined to the learning of language, the implications for learning and teaching in general will be obvious. In this paper we explore the nature of these Heuristics and propose a tentative theory as to why they should work.

Central to an understanding of LAHs is Bateson's notion of deutero-learning and his definition of "context", and Erickson's use of therapeutic bind and conscious/unconscious dissociation. Deutero-learning, according to Bateson (1975) is learning how to learn, a learning of a higher logical type. It is not learning content or about a content; it is learning about the process being employed for learning content. Think back for a moment to how you learned to memorize a large piece of text such as the Gettysburg Address. The teaching of how to learn, whether conscious or unconscious, is a basic effect of education.

In traditional language teaching methodologies, one is told to teach "in context," where the word "context" probably means something close to "the setting" or "the social setting". Such definitions may be satisfactory for certain purposes, but for our discussion something more rigorous is required. Again, Bateson (1975 and 1979) provides a useful conceptualization of context. Context is, according to Bateson, everything which classifies a message. It is the total frame which gives meaning to the message, and is termed therefore a meta-message or meta-communication. It is an additional message about the message. To quote Bateson (1975:156): "It is important to see the particular utterance or action as part of the ecological subsystem called context and not as the product or effect of the context after the piece which we want to explain has been cut out from it." **The foreign language**

learner's problem is how to acquire the contexts of communication and interaction of the new culture; that is, all those components of the system which create a relevance between messages and recipients.

In this light, the construct of an utterance is composed of not only the verbal content, but must necessarily include nonverbally, or analogically, expressed context. Context is perceived via the entire set of analogic pathways of information transfer-- visual, auditory, kinesthetic and olfactory-- in addition to the words themselves, the verbal/digital component. Learning of any kind generally includes perceiving context-defining data through all of these pathways simultaneously. The pathways carry the actual signals which convey information that classifies and supplies meaning to the communication. These signals Bateson (1975) has called context markers.

If we take "learning" to mean learning about particular contexts, then deuterio-learning implies learning about learning contexts. Individual human beings are always learning about the processes involved in transmitting context markers, i.e. the process of meta-communication, as they adapt to new situations. LAHs should be seen as manipulations of context markers in ways which instruct the student in the processes of acquiring the contexts of language.

Deuterio-learning as defined by Bateson is primarily an unconscious process, as is the process of perception itself. The term "unconscious", as used here, is not directly related to the Freudian notion of the subconscious but simply refers to those processes of information transfer which lie out of one's awareness. For instance, gestures, tone of voice and body movements, serve as context markers. All classify the verbal message they frame, but one is usually aware of only the meaning conveyed-- not the specific context marker that denoted that meaning. For example, a subtle facial gesture may go unnoticed by the conscious mind, but due to unconscious perceptions, the meaning of that gesture will affect the recipient, nonetheless.

In teacher-learner interaction, most meta-communication is likewise outside of awareness for both participants. If we assume that instruction in deuterio-learning is one of the fundamental meta-communicative functions of the classroom, then it may well be that teachers who achieve a high rate of success with students do so at least in part because of their constructive, albeit unconscious, manipulation of learning context markers. In other words, their students learn more efficient and more effective ways of learning what they need to learn as they learn it.

A Reading Language Acquisition Heuristic

It is tempting to underestimate the impact of this manipulation of context markers in teaching. One might attempt to discount the importance of deuterio-learning by claiming that the learner (especially the adult) comes to the situation already

knowing how to learn and that it is probably next to impossible to effect changes in a learner's cognitive style. It is the same attitude that encourages a very pessimistic view of any adult's chances of ever learning a second language in the first place. The argument here is that there is every reason to believe that certain aspects of cognitive style can be changed and are to some degree malleable. LAHs are one of the ways that such changes can be effected. A set of techniques sometimes used in teaching discourse-level processing in reading illustrates several features of LAHs.

The basic idea in this Reading Heuristic is that the learner must learn to extract the meaning of the text from the page without first knowing the meanings of all the individual words. Once that mental set is achieved, the language learner as reader then figures out the meanings from context, that is, learns the meanings of the words themselves. What is crucial from our perspective is the therapeutic-like nature of the language used in helping students develop mental sets that will ultimately facilitate the acquisition of word meanings. The language somehow conveys the seemingly paradoxical message: don't pay attention to the meanings of the individual words so you can learn the meanings of the individual words.

There are several features of the Reading Heuristic format, representative of LAHs in general, that deserve comment. Early in the development of the LAH technique, we were struck by the similarity of the LAH to the general format of hypnotherapeutic communication as conceptualized by Milton Erickson and his students. By the "format of hypnotherapeutic communication", we mean the following: In the Ericksonian model, when a therapist makes use of hypnotic suggestion to help a client effect some change in behavior, the interaction in which the suggestions themselves are embedded can be characterized as consisting of roughly six stages or steps. That model, presented in outline form in Figure One, suggests how LAHs operate. At some level the LAH not only maps on the Ericksonian paradigm for hypnotherapeutic communication. It is also, in certain aspects a model of good teaching.

HYPNOTHERAPEUTIC COMMUNICATION AND LAH COMMUNICATION FORMATS

HYPNOTHERAPEUTIC COMMUNICATION

1. Fixation of attention
2. Circumventing habitual belief systems

LAH FORMAT

LAH COMMUNICATION

1. Response attentiveness, introduction of tasks
2. Instructions to go beyond usual behavior, establishment of the conscious/unconscious dissociation

3. Instructions to the unconscious to begin a search for ways of dealing with a problem	STUDENT RESPONSE	3. Indirect instruction: metaphor, examples, providing models
4. Unconscious process: construct new solutions		4. Learner accesses own resources
5. Hypnotic response: unconscious signal, consciously perceived, that change is eminent		5. Change in awareness of one's abilities
6. Ratification: conscious knowledge that desired change has occurred		6. Awareness of change in one's abilities

Fig. One

Stage One entails the establishment of response attentiveness. In the case of the Reading Heuristic it means teaching the students to assume the correct attitude of concentration with respect to the text to be decoded. Stage Two involves getting the students to accept a paradoxical assertion of the type mentioned earlier about learning the meanings of individual words. In this case, students are also gently forced to read faster than they can read or faster than they can attend to the meanings of individual words, effectively breaking the tendency to read word-by-word. In Stage Three, the learners are given indirect instructions (to their unconscious, in some sense) as to how to "wait" for the meanings of words and how long it will take them to feel confident with their new ability. This can be done in the form of examples of other successful learners, metaphors, and modeling. The suggestions given must provide the learner with a number of options as to how he/she will master the processing task and how long it will take to do it. Technically, the LAH in Figure One is contained in Stages One, Two and Three of the LAH Communication Format.

Stage Four represents the learner's own internal working out of the strategy best suited to his or her own cognitive abilities. In the LAH format, Stage Five is that point at which the learner experiences a heightened awareness of his or her own potential to successfully accomplish the task at hand. At Stage Six the learner has discovered that he/she has learned how to read at the discourse-level, has learned a process.

Probably the key aspect of the LAH is the use of paradoxical statements such as that illustrated in Stage Two. This closely resembles what Erickson has called a therapeutic bind.

In the Reading Heuristic, the bind was: DON'T ATTEND TO THE MEANINGS OF THE WORDS SO YOU CAN LEARN THE MEANINGS OF THE WORDS. The theoretical framework for understanding the operation of the therapeutic bind comes from the work of Erickson and others on what has been called the schizogenic double bind:

A (schizogenic) double bind . . . offers possibilities of behavior that are outside the patient's usual range of conscious choice and voluntary control. The double bind arises out of the possibility of communicating on more than one level. A (therapeutic) bind (by comparison) offers a patient a free, conscious choice between two or more alternatives. Whichever choice is made, however, leads the patients in the therapeutic direction. (Erickson and Rossi, 1979:42)

An examples of the classic schizogenic double bind might be the case where a child gets contradictory messages from a parent such that the verbal content is "I love you" while the meta-communicative message, communicated by means of gestures and body language is "You are repulsive". Regardless of which message the child responds to (the verbal or metacommunicative) he can not possibly feel at ease and loved.

An Ericksonian therapeutic bind also utilizes multiple levels of communication but, as noted above, for a different purpose. It is generally formulated as a dissociation between conscious and unconscious processes. A dissociation is a functional separation which is created in order to achieve a certain specified outcome. In the conscious/unconscious dissociation, the activities and internal processes of the conscious and unconscious minds are channeled into separate tasks in order to allow better overall processing of information. In the case of the Reading LAH, the conscious mind is assigned the task of apprehending the meaning of the passage as a whole while the unconscious is given the task of getting the meanings of the individual words.

The conscious/unconscious dissociation created by the bind is the psychological basis of a language acquisition heuristic. One of its primary effects is to turn over more of the process of learning to the unconscious mind. The construct of the conscious mind, as mentioned before, can be thought of as the ongoing ability to hold experience in awareness. The construct of the unconscious includes all those portions of experience of which we are not aware, experiences which it might be possible to call into awareness at any given moment. Due to the limitations of consciousness, many tasks are simply too complex for the conscious mind.

Krashen, e.g. Krashen (1977), and others make a distinction between language learning and language acquisition. Language learning is said to be the conscious process; language acquisition, on the other hand, is supposedly unconscious. LAHs could be thought of as attempts to facilitate language acquisition as opposed to learning. That is not to say, as some have maintained, that conscious processes such as those dealing with grammatical rules are not important but only that we must attend to the unconscious processes as well.

Language learning is of such complexity that only unconscious processes can begin to account for most of the changes that take

place between the first and second language. LAHs are interventions attempted by the teacher to, among other things, facilitate conscious/unconscious dissociations in the learner. The ability to assume this dissociative mental set seems to us to be an essential characteristic of the truly successful language learner.

In conclusion, to better understand how people learn, we must not only describe and model teaching at the deutero-learning level but also classroom meta-communication in general. Deutero-learning, learning how to learn, is basically an unconscious process. That means that attempts to systematically teach students how to learn will have to consciously utilize not only conscious but also decidedly unconscious processes as well. LAHs are a first step, a conscious effort to do that.

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SOCIO-PSYCHO-LINGUISTIC TESTING IN THE DEVELOPMENT
OF AN ORTHOGRAPHY FOR A PRELITERATE SOCIETY

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Introduction

This paper presents some of the results of my research among a preliterate society of the Philippine Islands and some implications of that research for orthographic design. Although I will be discussing how linguistic, sociological, and psychological factors all need to be taken into consideration in the selection of an orthography, the emphasis will be on sociolinguistic and psycholinguistic factors relating to orthographic design. It is assumed that before an orthography is planned, a detailed linguistic analysis of the target language has been completed. An example of a questionnaire-type survey which an orthographer can use to determine native-speaker reaction to plausible spelling variation is included. I have called the instrument a socio-psycho-linguistic test because of the difficulty in separating the psychological view of a speech sound or utterance from the sociological aspects of interaction with other speech communities.

The linguistic and educational research discussed in this paper was conducted from 1973-1976 among the Sama Bangingi, an Islamic minority group of approximately 80,000 speakers in the Southwestern part of the Island of Mindanao in the Republic of the Philippines. These sea-faring coastal dwellers of the Zamboanga Peninsula and Sulu Archipelago have been heavily influenced by other languages over the past several centuries. The writing systems of these societies still carry varying degrees of prestige and have affected the way a Sama Bangingi person "feels" or "thinks" his language ought to look when it is written down. Thus, as an orthographer, I felt I must not only concern myself with sound linguistic analysis of the target language, but also be familiar with the orthographic conventions of historical and current writing systems which have sociologically and psychologically affected how the Sama Bangingi speaker views his own language. This linguistic analysis coupled with socio-psycho-linguistic testing and a knowledge of the writing systems of contact languages, were the basis for an orthography that was acceptable to the majority of educated Bangingis. This orthography enables native speakers of Sama Bangingi to become literate in their mother tongue while at the same time expediting the transfer of the reading skill to the regional and/or national lingua franca and vice versa.

Linguistic Considerations

Since the orthography of a language contains the basic units of a language's writing conventions, it is imperative that it

incorporate scientific accuracy with social acceptability. To satisfy scientific accuracy, a linguistic analysis of the language is necessary. This analysis is used to select a set of symbols to handle all significant contrasts.

Linguistically, the relative simplicity of the phonology of Sama Bangingi (17 consonantal phonemes and 5 vowel phonemes) makes a one-to-one relationship between the phonemes and the graphic symbols a simple matter. Therefore, it appears expedient and prudent to utilize a phonemically-based orthography. Ashley (1973) has stated:

The basic principle which guides the orthographer in his work is the principle which states that each distinctive sound (phoneme) must have one and only one distinctive symbolization. (There must be a one-to-one phoneme-grapheme relationship.) This means that each distinctive sound should be written the same way in each occurrence unless other considerations dictate to the contrary. (p. 88)

Although this principle may not apply to all of the world's languages, it is basically sound for the languages of the Philippines. From a purely linguistic point of view, one could be content to proceed with the aforementioned type of orthography and not make any further modifications or adaptations. However, additional factors must also be considered when deriving a consistent system of writing.

Sociolinguistic Considerations

The written material of a dominant or more prestigious language frequently exerts pressure on the minority group to conform. In the Muslim communities of the Philippine Islands, of which Sama Bangingi is a part, the Arabic language is held in high esteem. Devout Muslims are taught to chant the Koran in Arabic while following along in their book even though many of them do not understand what the symbols stand for nor what the words mean. Arabic script was also used in the writing of a neighboring language before the introduction of the Roman script. Today there are Muslims of the various language groups of Islamic persuasion who have learned to read only Arabic or Arabic script. Arabic follows the convention that each vowel must have a consonant carrier. Therefore, there are no vowel clusters in written Arabic. The rule followed in Arabic for separation of vowel clusters is to use the equivalent of y and w.

Although Spain controlled the Philippine Islands for more than 350 years, the prevailing attitude between Muslim and Spaniard was one of mutual distrust. The historical animosity between the Moors and Spain coupled with Spain's inability to Christianize the Filipino Muslim kept them distant. However, the Spanish influence in the provincial capital of Zamboanga City where many of the Sama Bangingi currently live, is very evident in the existence of a Spanish Creole language spoken by the politically and

economically dominant Chabakanos. The influence of Chabakano on the Bangingi is more oral than written. During the process of trading and complying with government regulations, many Sama Bangingi Filipinos have learned to speak Chabakano. Thus, the Spanish language had an indirect influence on the Sama Bangingi in that the influence came through a Spanish Creole language.

Educationally, the Americans probably had a greater influence on the people of the Philippines than either the Arabs or the Spaniards. The Americans introduced free public education and sent hundreds of teachers to teach in Filipino schools. Because of the diversity of languages and the prevailing attitude of the times that unity would best be achieved by using a common language, English became the basic language of instruction. A fair number of Sama Bangingis took advantage of this offer of education. Though English is certainly not written with a one-to-one phoneme-to-grapheme representation, many of them learned to read it and many are still learning to read English today.

The national language of the Philippines is Pilipino, a language based on the Filipino language of Tagalog. Since Pilipino and English are the two mediums of instruction in the public schools, most literate Filipinos are familiar with the grapheme-to-sound relationship of both languages. Literate Filipinos are also exposed to Pilipino through literature, newspapers, magazines, and government paperwork. Therefore, they are cognizant of the spelling conventions and patterns of Pilipino.

The orthography of Pilipino is phonemically-based with the added convention of transitional consonants between two contiguous vocoids. In the case of a glottal stop between vowels, no orthographic symbol is used at all and a reader of Pilipino is taught that a glottal stop is to be placed there automatically. Example: /siam/ is written siyam meaning 'nine' and /babaʔe/ is written babae meaning 'female'.

The Sama Bangingi literates, approximately only 30% of the speakers of the language, were all taught to read in another language, more than likely one of the above four. There were some of those who had attempted to write their own vernacular, trying to fit Sama Bangingi phonemes into the orthographic conventions of another language. This sometimes resulted in a multitude of spelling variations, especially when Sama Bangingi did not match up phonemically to the learned language or when one native speaker would base his/her spelling choice on one orthographic system and another speaker would rely on a different system. Therefore, it was very useful to understand the influence that these other languages had exerted on the Sama Bangingi over the years when making orthographic decisions regarding the writing of Sama Bangingi.

Psycholinguistic Considerations

In addition to the linguistic analysis of the language and the sociolinguistic pressures of other language groups is the consideration of psycholinguistics, or the way the native speaker feels about how his language is put together.

Johnston (1967) lists

three factors which are of major influence in establishing an orthography for a previously unwritten language...

- (1) The native speaker's reaction (phonemics) to the phonological elementals (phonetics) of his language.
- (2) Sociolinguistic pressure from a prestige language, and,
- (3) the analyst's own psycholinguistic feelings concerning orthographical symbols and conventions. (p. 3)

To discover number one above, which is the root of psycholinguistics, the analyst must be alert to the native speaker's intuitive linguistic reactions and then administer psycholinguistic tests, especially on questionable items.

Number two implies that the orthography in question may need to conform to other orthographies of major languages of the country if native speakers of that language so desire.

The trained analyst cannot avoid having personal convictions about how the language under study should be written. Indeed, he has the responsibility to consider his own psycholinguistic feelings as well as his linguistic findings but he must not let number three above dictate by imposition aspects of the orthography which are diametrically opposed to native reaction. To do so may jeopardize the future use of the orthography or written materials which utilize that orthography and negate the investigator's work.

It is apparent that, in the realm of orthography-making, narrowly linguistic factors are must less important than socio-cultural ones.... One firm conclusion emerges from the data: any scientifically based, yet socially acceptable, orthography for a given language represents a compromise among a variety of socio-cultural variables. (Sjoberg, 1966, p. 273)

To attain acceptability of an orthography for the Sama Bangingi necessitated a knowledge of these historic influences and an understanding of how the Sama Bangingi accommodated these influences into the spelling patterns of their own language. It also necessitated a survey of native-speaker reaction to spelling Sama Bangingi words and phrases.

Survey of Native-Speaker Reaction to Spelling Patterns in Sama Bangingi

The orthography best suited to the needs of adult literacy programs would be one that can be efficiently learned, easily read and written, and economically reproduced. (Ryan, 1980, p. 114)

The relatively simple phonology of Sama Bangingi makes compli-

ance with the above criteria a fairly easy matter. In most cases the Roman alphabet would suffice using a one-to-one grapheme-phoneme relationship plus the digraphs 'ng' and 'ny' commonly used in Philippine languages. There were still problems, however, in making orthographic decisions. Experience with literate Bangingis revealed inconsistencies in spelling choices for glottal stop and identical vowel sequences and other contiguous vowels. It had been observed that several means were employed to indicate glottal stop and that transitional consonants were indiscriminately used to separate vowel clusters.

To ascertain the native speaker's reaction to the investigator's orthographic considerations, as well as to elicit their own intuitive feelings on the matter, a socio-psycho-linguistic test was designed. The intention of the test was to determine the preference of native speakers concerning the spelling of their language. A test such as this required the use of native speakers who were literate in a language other than their own.

It is recognized that being already literate in another language predisposes the testees to make certain choices. In an ethnic minority culture like the Sama Bangingi, who value conformity and respect the opinion of educated members of their group, this bias was considered approbate. However, this prejudicial outlook was kept in mind when interpreting the results.

Participants. Three regions incorporating six distinct communities were selected for participation in the study. They were chosen on the basis of homogeneity in regards to language, religion, and culture. The religion and culture are Islamic and all three areas refer to themselves and recognize the others as Sama Bangingi communities. The three regions were: (1) the Sama Bangingi Muslim communities of Zamboanga City proper; (2) Taluksangay and Arena Blanco, islands near Zamboanga City; and (3) Panigayan, an island of Basilan Province, about 10 nautical miles from Zamboanga City.

In each community, a leading member of the barrio or neighborhood was contacted, rapport was established, and the purpose of the study outlined to him. The community leaders assisted in procuring Bangingi literates for the study. (A literate being one they identified as a person who could read and write.)

Ultimately, a total of 42 literates from the different areas were tested. The age of the examinees ranged from 13 to 51 years. Educational attainment was spread from grade 4 to graduate students working on their Master's degree. The younger examinees had at least attended high school while a few of the adults who had been out of school for several years had not completed elementary school.

Method. Before the test was given, each examinee was given a questionnaire and asked to supply biographical data for the eventual breakdown and analysis of the test items into component parts. Included on the information sheet were questions about their reading habits and reading aspirations. It was desirable to know the reading habits of the examinees to determine possible acceptability on their part of future reading materials.

The test itself contained three parts. Part I was an oral spelling test in which the examiner gave each word orally in Sinama, used it in a sentence, and then repeated the word again. The examinee was asked to write it as he thought it should be spelled on the paper supplied to him. The first two items of Part One were non-problematic easy-to-spell words to bolster the person's confidence. These two items would also give the evaluator an idea of the examinee's ability and thoughtfulness in his spelling patterns. Each examinee was assured that no one answer was more right than another; their preference was all that was desired.

Part II was multiple choice. The testee was given a copy of the test which contained words or phrases with three or four alternate spelling choices. Each choice was linguistically feasible. The words were chosen to present only one orthographic problem per test item. This insured more accurate interpretation as to the reaction of the testee.

For each separate orthographic question of Parts I and II of the test there were two to five items randomly distributed throughout the test which tested that problem. This allowed for comparison of the consistency of responses of each person taking the test.

Part III was oral reading. Since English and Pilipino are the mediums of instruction in the public schools, it could be assumed that a literate Bangingi had been exposed to reading in both of these languages. The examinee was asked in which language he preferred to read--English or Pilipino. To determine his reading fluency, he was asked to read one or two paragraphs (about one half of an 8-1/2 x 11 inch page typed and double spaced) in the preferred language.

To make the transition from English or Pilipino to Sinama, the examinee was given a story written in Sinama and asked to read it. This story was for practice-reading in his own language and for familiarizing himself with the spelling patterns used. The orthography used in the written Sinama was based on the investigator's predicted outcome of the socio-psycho-linguistic spelling test based on a trial test and samples of their writing. All of Part III except the Sinama practice reading was recorded on cassette tape. All three parts were administered by the investigator.

Objectives. Parts I and II of the test were designed to obtain a consensus, if possible, regarding particular orthographical conventions. Part I was planned to elicit the examinees' own intuitive feelings on specific spellings. The emphasis of Part II was to determine native speaker's reaction to orthographic considerations given by the investigator.

Plan for Assessment. To evaluate the response of the examinees, items dealing with specific orthographic considerations were tabulated and grouped together so that results of one orthographic point at issue could be evaluated collectively.

The oral reading was planned to provide for appraisal. The principles outlined by Harris (1961) for appraising reading performance with American children were adapted to the oral reading

section for analyzing orthography preferences of literate Banginis. That is, the tape was analyzed for fluency, pauses, and repetitions, diagnosis of which could indicate potential difficulties with the spelling.

There were forty items to Part I spelling test. The following are ten sample items: /lumaʔ/ meaning 'house'; /dilaut/ meaning 'out to sea'; /sauwal/ meaning 'pants'; /ia/ meaning 'that one'; /agtui/ meaning 'immediately'; /mpat/ meaning 'four'; /yuk/ meaning 'say, said'; /kuit/ meaning 'skin'; /daŋ/ meaning 'fish'; and /buas/ meaning 'rice'. As previously mentioned, each item was spoken orally, used in a sentence, and then the word was repeated again. The respondents were to write the word in the Sama Bangini vernacular.

There were fifty-two items included in Part II which was multiple choice. The following are ten sample items: (The English gloss was not included on actual test.)

- | | |
|------------------------|--------------------------|
| 1. a. soa 'snake' | 2. a. tuut 'knee' |
| b. sowa | b. t̃ut |
| c. soua | c. tu'ut |
| | d. tu-ut |
| 3. a. mata-ku 'my eye' | 4. a. dadan 'frequently' |
| b. matakū | b. daran |
| c. mata ku | c. dalan |
| 5. a. saying 'banana' | 6. a. babu 'aunt' |
| b. saing | b. babu' |
| c. sayng | c. babū |
| 7. a. saw 'anchor' | 8. a. keot 'fire' |
| b. sau | b. keyot |
| c. sawu | c. keiot |
| 9. a. magmanis 'make a | 10. a. sin 'money' |
| b. mag-manis face' | b. siin |
| c. mag manis | c. sihn |
| | d. s̃in |

Summary of Test Results. Parts I and II were analyzed for consistency in spelling patterns. Each item dealing with a specific orthography consideration was grouped with like problems so that results of one orthographic question could be evaluated collectively.

The results of Part III indicated that the examinees could read the orthography chosen by the investigator for purposes of this survey as well as they read the orthography in which they became literate. That is to say, that while reading difficulties were present for a given individual, there was a high degree of comparison between reading fluency in Sinama and the language in which they chose to read. There was no indication that any of the orthographic symbols was a cause of reading difficulty. Consequently, while Part III shows the given orthography was readable, Parts I and II reveal the finer psycholinguistic leanings of the examinees.

Tabulation from Parts I and II revealed inconsistencies in spelling preferences, especially in certain vowel sequences, the syllabic consonant, the glottal stop and the joining of affixable

morphemes. This is to be expected, however, as the languages previously mentioned which have influenced literate Bangingis either do not have these features or have handled them in a complex manner.

The definite trend of the literate Bangingis tested toward using transitional consonants between juxtaposed non-geminate vowels, however, can be deduced from the data collected. Also, the preference for a symbol to indicate glottal stop was evident.

These educated Bangingis represent the leaders or future leaders of their language group and by virtue of their educational status hold persuasive influence over their illiterate neighbors. The orthography, therefore, must be acceptable to the leaders if it is ever to achieve widespread use. It should also be acceptable to non-speakers of the language who are present in the community such as administrators, educators, and government officials. Thus, it was concluded that some use of transitional consonants was unavoidable even though their use is contrary to the principle that there must be a one-to-one grapheme-phoneme relationship. As Fox (1965) states,

a truly scientific alphabet with a one-to-one correspondence between phonemes and symbols is by far the easiest to read. We are willing to compromise, however, if, for example, the people are unwilling to accept our phonemic orthography because it doesn't look to them enough like the orthography of the trade language. (p. 96)

Orthographic Decisions

To apply the results of the socio-psycho-linguistic test to orthographic decisions, transitional consonants will be utilized in Bangingi where their counterpart sequences are found in the national language.

In the long run, it appeared that using transitional consonants for most vowel combinations was best even though it meant a few extra spelling "rules." This convention will further facilitate the transfer of reading skills whether one first learned to read in Arabic, Pilipino, or his own vernacular. In general these "rules" pose no problem for the native speaker. Indeed the literate Bangingi seems more comfortable with them and reads with greater fluency when the transitional y and w are utilized.

The vowel sequences ai and au, infrequent in Pilipino but very common in Sinama, will be written with no transitional consonant to separate them. There was no consistency nor consensus toward the spelling of these combinations shown on the socio-psycho-linguistic test. Spelling these combinations in this way makes it easier to reconstruct the underlying form of the word and agrees with the spelling patterns of related Sinama dialects. Thus, transitional consonants will separate all vowel combinations except after the letter a.

In addition to the above vowel combinations, Sama Bangingi also has lengthened vowels. These identical vowels occur contiguous to each other and each is the peak of a separate syllable.

When this occurs between two consonants as in a CV-VC syllable pattern, it will be written with the two vowels and a macron over both. The macron will give the reader the cue that the two vowels should be given their full pronunciation without the interjacent glottal stop. When the two vowels are both written without a macron, the tendency is to insert a glottal stop as would be the case in the national language. Spelling test results (Parts I and II) express a preference for using a single vowel over other spelling possibilities for vowel length. However, in Part III the majority of readers had difficulty in fluency when vowel length was not indicated, especially in polysyllabic words. Thus because of linguistic pressure, some symbol is necessary to indicate vowel length versus a single vowel. A single vowel implies a single CVC syllable. Two vowels reflect the proper CV.VC two syllable pattern. As Powlison (1968) says,

An efficient orthography must not only be acceptable to the users and readable by them, it must also be able to communicate a message to its readers as unambiguously as possible. (p. 80)

The practical orthography chosen to represent consonantal phonemes followed the conventional choices. Because of the influences of other Filipino languages /ñ/ was written ny; /ŋ/ was written ng; /dʒ/ was written j; glottal stop /ʔ/ was written ' (apostrophe); and the allophones of /d/ namely [d] and [ɾ] were written d word initial and r word medial.

There were two syllabic consonants m and n which sometimes occurred as syllable peaks. They were simply written as m and n respectively with no accompanying vowel.

Testees used the most diversity of symbols for indicating glottal stop. Some writers chose h to symbolize word-final glottal stop. Some chose the apostrophe. Some followed the national language convention which uses the grave accent, the hyphen or signals the glottal stop by the absence of any symbol depending upon where it occurs in a word.

The socio-psycho-linguistic test results indicated that literate Bangingis usually like some symbol to indicate glottal stop. For consistency, an apostrophe mark will be written whenever the glottal stop occurs except that word initial glottal stop is not symbolized. This consistent use of one symbol for glottal stop also makes the non-use of transitional consonants following the letter a less ambiguous even for those Sama Bangingis who are already literate in Pilipino.

The hyphen will be used in three different ways: word breaks, reduplication of words, and with possessive pronouns.

The conventional use of the hyphen will be employed when breaking a word at the end of a line and continuing it on the next line. Reduplicated words or morphemes will be hyphenated when there is more than one syllable to the repeated part. Testing with Bangingi literates has demonstrated that this helps to avoid pronunciation problems, especially when the duplication produces juxtaposed vowels or when the first half of the duplicated morpheme ends in a consonant and the first syllable of the second

half begins with a vowel. To maintain the normal Sinama syllable patterns, the hyphen is useful to avoid confusion. The meaning of the words remains the same. The hyphen is a convention simply to aid reading fluency.

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THE INFLUENCE OF PHONETICS, SEMANTICS, ETYMOLOGY AND PREFERENCE ON ENGLISH SPELLING

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What's in the Literature on English Spelling

The paradoxical inconsistencies of English spelling can only be ferreted out by following rigorous and tedious scientific principles of linguistic research. The principles of classifying scientifically must not be limited to phoneme-grapheme correspondence since to do so will vitiate the search to understand English spelling and yield results similar to those reported by Clymer (1963), Bailey (1967), Emans (1967), and Burmeister (1968a, 1968b, 1971). These researchers focused on 45 common phonic generalizations most frequently found in manuals accompanying basal reading programs. Their efforts yielded confusion and inconclusiveness for three basic reasons. (1) Rigorous and scientific principles did not set the parameters and guide the linguistic inquiry the researchers attempted to conduct. (2) The myopic perspective of phonics, which is common among authorities on reading, prevented a scientific inquiry into English spelling. (3) The word population, from which the samples were drawn, was skewed. For the most part, the word population came from basal readers which provide an atypical view of English spelling. This is compounded when common phonic generalizations are used in an attempt to discover consistent spelling patterns. These generalizations were developed by reading specialists and are promulgated by them too (Anderson, 1969; Bush & Huebner, 1979; Chall, 1967; Cheek & Cheek, 1980; Cordts, 1965; Duff & Sherman, 1977; Durkin, 1970; Fry, 1977; Guszak, 1972; Heilman, 1972; Karlin, 1980; Smith, 1965).

Smith's Reading Instruction for Today's Children was once the most widely used college textbook used in preparing elementary teachers to teach reading. The kindest assessment that can be made about the phonics presented in this book is that they may describe some writing system found somewhere in the universe, but they certainly do not describe the English writing system. Smith's phonics chart (p. 196) is riddled with contradictions and errors. Some examples of inaccuracies pertaining to correspondencies for consonant phonemes and graphemes are: (1) The graphemes c, r, and x are listed as being associated only with one specific phoneme. The grapheme c represents the phonemes /k/ and /s/ as in cut and cell. The grapheme x may represent the phonemic pairs of /k/ and /s/ or /g/ and /z/ as in except and tax; exact. It may represent /z/ only as in xylophone and xylem. In a few foreign words, it also represents the phonemes /s/ (Xochimilco), /k/ (Xhosa), and /sh/ (Xinger). The grapheme r represents the

distinct variations in the phoneme /r/ as heard in red, car, air, and poor. It also combines with the vowel graphemes a, e, i, o, and u to form digraphs to represent the stressed and unstressed vowel phonemes heard in ampere, fir, fur (stressed); better, doc-tor (unstressed).

Secondly, Smith contradicts the entry of c as being a grapheme which represents one phoneme by placing it in the category of consonant graphemes which represent two or more sounds. For this grapheme under this category, the examples of came and face are given. Thus, the letter c appears in both categories for graphemes which represent one and two or more sounds. (3) The graphemic combinations of dl and wr are listed as representing consonant phonemic blends. Of course, no such blends occur in English phonology. (4) Under consonant digraphs, which represent one phoneme, Smith lists nk. This combination represents a blend of the two phonemes /ng/ and /k/ as in bank (/bangk/) and think (/thingk/). In this same category, she places the combinations of ch, gh, and qu as representing only one phoneme. Of course, each of these represents at least two different phonemes. For ch, we see this in words like church, chin and choir, school. One wonders why Smith gives sch as representing a blend in her column on blends and then gives ch as representing only one phoneme under consonant digraphs. Surely, she does not suggest /s/ and /ch/ represent a consonant blend. No such blend exists in English. It is more likely that she is unaware of the /ch/ phoneme and thinks of ch as representing only /k/. The gh combination represents the /g/ phoneme as in ghost and ghetto; /f/ as in cough and rough; it represents no phoneme in words like light and might. The qu combination may represent the /k/ and the /kw/ phonemic blend as in plaque, technique, and queer and square. Smith omits reference to the graphemic combinations of ci, si, ti and tu which are also consonant digraphs as in facial, mission, station and furniture.

Smith's description of vowels is just as inadequate as is that for consonants. Under vowel diphthongs, she presents oi and oy as representing one sound. Of course, the word diphthong means a combination of two vowel phonemes. She gives such words as cow, show, bough, journey, though, through, and touch as vowel blends of two or more sounds. She confuses vowel digraphs with diphthongs. For her authorities, Smith cites Cordts and McBroom (1927). What this illustrates is that reading specialists prefer to pass on incorrect information about the English spelling system rather than use a dictionary to verify old information and to acquire new understanding. This does not mean reading specialists have flawed characters. It simply demonstrates a loyalty to professors who taught them and helped them achieve advanced degrees. It also reveals a lack of interest in and study of language which are permitted by the program of studies which lead to becoming a reading specialist. Of course, this same type of deference and loyalty occurs in other disciplines. Wherever and whenever this occurs, it impedes the advancement of knowledge. It has occurred far too long in those disciplines in which scholars are prepared to be reading specialists.

Smith cites a study by Aaron (1960) to lament the fact that

experienced and prospective teachers have a deficiency in a knowledge of phonic generalizations. Using a sample of 293 subjects, among which were both experienced and prospective teachers, Aaron's research yielded a rounded-off mean score of correct items of 57. Smith (p. 198) expresses the hope that readers of her book will become acquainted with at least the following common phonic principles: (The comments in parentheses which follow each of the principles are not a part of Smith's presentation. They are comments by this author.)

1. When a one-syllable word contains two vowels, one of which is the final e, the first vowel is usually long and the final e is silent, as in pine and note. (Common exceptions to this generalization are: have, give; receive, leave; dance, glance; fence, defense, sense; please, tease; purse, house; teethe, wreath; plaque, technique; breeze, sneeze.)
2. When there is only one vowel in a word and that vowel does not come at the end of the word, the vowel is usually short, as in pin, not. (Common exceptions to this generalization are: wall, fall; cold, sold; bird, girl; burn, turn; light, night; port, ford; womb, tomb.)
3. When two vowels come together in a one syllable word, the first vowel is usually long and the second vowel is usually silent, as in boat, hail. There are some exceptions, of course, such as bread. (Common exceptions to this generalization are: boil, soil; shout, rout; captain, certain; book, cook; shoot, coop, group; clause, cause; should, would, wood.)
4. If y is the final letter in a one-syllable word, it is usually long, as in fly, cry, cypher; if it is the final letter in a two-syllable word, it is usually short, as in baby, happy. (Common exceptions to the first of these two generalizations are: day, pay, they, gray, play. Common exceptions to the second of these two generalizations are: obey, astray, decay.)
5. The letter c has the soft sound when followed by e, i or y, as in center, city, cypher; it has the long sound when followed by o, a or u, as in cold, cage, cure. (The terminology of soft sound and long sound offers nothing toward describing the correspondence between the grapheme c and the phonemes /k/ and /s/. It would be more meaningful to guide students to acquire an understanding of why the grapheme c represents the phonemes /k/ and /s/ in English: that is, what purpose or purposes are served by having the grapheme c in English spelling.)
6. The letter g has the soft sound when followed by e, i, and y, as in gentle, giant, gypsy. (Again,

- referring to a phoneme (in this case /j/) as being soft when represented by the grapheme g before vowels, represented by the vowel graphemes e, i and y explains nothing. Common exceptions to this generalization are: gear, geld, get; gib, gibbon, gift, gild, gill, gird, girl, give.)
7. When ght appears in a word, gh is silent. (There are less than 20 of these words in the Funk and Wagnall's Standard Dictionary. All of them except two have an Old English etymology. One (tight) is given as having a Middle English etymology. There are two plights. One has an Old French etymology; the other, Old English. Thus, we can conclude that the silent gh indicates etymology as well as the vowel being long. Other words with either gh being silent (dough, thought, naught) or represent the phoneme /f/ (laugh, cough, tough) also have Old English etymology.)
 8. Usually, a consonant is silent in these cases:
K when it comes before n, as in knee.
W when it comes before r, as in write.
C when it is joined with k, as in kick.
Gh when it comes at the end or close to end of a word, as in though.
I when it comes in the middle of a one-syllable word, as in hatch.
 (The functions of these silent letters are never discussed. It is as if Smith believes they are without purpose.)
 9. The vowels a, e, i, o and u all have a soft, short sound which is the same as in balloon, garden, April, cotton, and circus. This sound always occurs in an unaccented syllable and is called the schwa sound. (Smith is correct about this vowel phoneme being unstressed and being designated as schwa. Referring to a phoneme as being soft describes nothing. It would be helpful if reading specialists would indicate that English has no graphic patterns for the schwa vowel as well as eight other vowels. That is, for the 19 English vowels, only the 10 referred to as being long and short have specific graphic patterns.)

It was the utility values of phonic principles like these which Smith offers that Clymer, Bailey, Emans, and Burmeister researched. The results of their efforts are of little value because they do not explain why the English spelling system functions the way it does. Let us focus on a few phonic generalizations pertaining to consonant phoneme/grapheme correspondences which Clymer, Emans and Bailey report to have 100% utility values to demonstrate how useless to the teaching of reading they are, as well as how nothing is explained about English spelling.

1. When c and h are next to each other, they make only one sound.

Comment: Which of the two phonemes associated with the ch digraph is the only phoneme represented? Is it the /ch/ phoneme as heard in church or the /k/ in school? Why does this digraph represent the /k/ phoneme in English spelling? These specifics appear not to have been a part of the consideration which yielded the 100% utility value.

2. When the letter c is followed by o or a, the sound of k is likely to be heard.

Comment: This statement does not direct a reading specialist, a teacher or a student to ask why English spelling uses the grapheme c to represent the phoneme /k/ before the graphemes o or a. Like most phonic generalizations, this statement fails to stimulate the scientific inquiry which would lead to understanding and appreciating English spelling.

3. When a word begins kn, the k is silent.

Comment: The function of k must be other than that of representing a phoneme in words which begin with the grapheme kn. What is the function? Again, this phonic generalization tends to obfuscate rather than clarify English spelling.

4. Ch is usually pronounced as it is in kitchen, catch and chair, not like sh.

Comment: Clymer reported a utility value of 95% based upon an analysis of words found in basal series for the primary grades. Emans' sample of 10% of the words beyond primary levels in The Teacher's Word Book of 30,000, by Thorndike and Loye, yielded a value of 67% utility. Bailey's analysis of words that were found in two or more of eight leading basal series for the first six grades yielded a utility value of 87% for these ch generalizations.

These rather high utility values demonstrate just how skewed basal vocabularies are. It appears the instances of the digraph ch representing the phoneme /k/ was not included since the focus was on the phonemes /ch/ and /sh/. Looking at words in the Funk and Wagnall's Standard Dictionary, which begin with the lower case ch digraph, we found 49% of them had the initial phoneme /ch/; 39% begin with /k/ and 12% with /sh/. Double and multiple entries like charge, -charge account and chemical, -chemical agent, -chemical-bond were counted only once. This generalization fails to initiate a search to find out why the digraph ch is used in English spelling to represent the phonemes /ch/, /k/, and /sh/. The greatest disservice phonic generalizations do for those acquiring literacy is that they keep them ignorant of the functions of English spelling. Thus, they prevent the acquisition of liter-

acy to the fullest extent by those learning to read and write English.

The idea of utility values for phonic generalizations has not led to helping prospective and practicing teachers develop an understanding of how English spelling functions. The extensive publicity given to the results of Bailey's, Burmeister's, Clymer's, and Emans' research has reinforced the belief that English spelling cannot be understood. It is portrayed as having a system without purpose and organization. The International Reading Association's prestigious periodical, *Reading Teacher*, carried each one of these reports. These studies give credence to Gelb's (1969, p. 224) perception of English spelling, which is:

There is no rhyme or reason for the English spelling of 'height' as against 'high,' 'speak' as against 'speech,' 'proceed' as against 'precede,' or 'attorneys' as against 'stories.' The preservation of these irrational spellings in modern English writing seems to be due to an old and inborn individualistic tendency, adverse to accepting any bounds imposed by systematization.

As an illustration of this attitude, Gelb refers to how Dr. Crown, an eighteenth century author who spelled his name indifferently as Cron, Croon, Crown, Crone, Croone, and Croune. He also reports how Lawrence of Arabia who, when asked by his publisher to try to spell his foreign words and names more uniformly, answered, "I spell my names anyhow to show what rot the systems are."

Gelb (pp. 224-225) further illustrates the inconsistency of English spelling by telling a story similar to George Bernard Shaw's *Ghoti Story* (Hodges & Rudorf, 1972; LeFevre, 1964). According to Gelb, a foreigner, whose name sounded like Fish, became annoyed with the flexibility of English spelling and spelled his name Ghotiguh. He derived it, grapheme by grapheme, from the spelling of the following words: gh represents /f/ in tough; o represents the short vowel /i/ in women; ti represents /sh/ in station, and ugh is silent in dough.

Responding to the Ghoti story, Lefevre (p. 182) explains:

In spelling practice, not a one of the three phonemes is regularly represented in these portions by these graphemes. The gh is never used initially; ti representing [sh] does not occur finally but medially—the initial part of a suffix as -tion or tiate; and o as short i occurs precisely once in English, in the word women.

Respected reading authorities like Burns and Roe (1980), Cheek and Cheek (1980), Hall, et al. (1979), Mazurkiewicz (1976), and Spache and Spache (1973) and Zintz (1975) indirectly guide teachers to believe English spelling is a mystery beyond the comprehension capacities of reading professors, elementary teachers, and pupils. These authorities believe phonics as stated by common generalizations confuse more than aid the acquisition of literacy

while such authorities as Chall (1967), Durkin (1970), and Walcutt, et al. (1974) stress the importance of phonics in beginning reading instruction. These two camps perennially debate the usefulness of phonics without ever studying some dictionaries in-depth to determine the functions of English spelling. It appears as if they are like the philosophers who enjoyed talking about how many teeth a horse has so much that the dominating rule of the game was not to go count the teeth to find out. Dictionaries are as sealed to professors of reading as these philosophers wanted horses' mouths to be to man. Perhaps, the human mind is the greatest sealer man has. Certainly, the dictionary was sealed during the studies of the values of phonic generalizations. If the dictionary had been opened for these studies, it could have flawed the research design to the extent that the editor of the Reading Teacher would not have published them.

The greatest contempt for the English spelling system is that expressed by the recurring "innovations" of modified alphabets (Downing, 1965, 1964; Malone, 1962; Mazurkiewicz, 1964; Pitman, 1964; Rohner, 1966), diacritical marking systems (Fry, 1964), and even the use of colors (Gattegno, 1962) to represent phonemes. They are recurring because Brigham Young (1868) developed an alphabet and Nellie Dale (Morris, 1963) in 1899 proposed the use of colors to represent specific categories of phonemes. They only appear as innovations because so many reading specialists are so unread. It is not difficult to have innovations among the unread.

The major emphasis of English spelling modifications is that traditional English orthography is too complex for beginning reading instruction. George Bernard Shaw's Ghost Story is often used to prove this point. A poem published by the London Sunday Times, over the initials T.S.W., also brings delight to those in English spelling distress. The poem follows:

Hints on Pronunciation for Foreigners

I take it you already know
Of tough and bough and cough and dough?
Others may stumble but not you,
On hiccough, thorough, laugh and through.
Well done! And now you wish, perhaps,
To learn of less familiar traps?

Beware of heard, a dreadful word
That looks like beard and sounds like bird,
And dead: it's said like bed, not bead--
For goodness' sake don't call it 'deed'!
Watch out for meat and great and threat
(They rhyme with suite and straight and debt.)

A moth is not a moth in mother
Nor bath in bather, broth in brother,
And here is not a match for these
Nor dear and fear for bear and pear,

And then there's dose and rose and lose--
 Just look them up--and goose and choose,
 And cork and work and card and ward,
 And font and front and word and sword,
 And do and go and thwart and cart--

Come, come, I've hardly made a start!
 A dreadful language? Man alive.
 I'd mastered it when I was five.

A child who has learned the basic phonological and syntactic structures of his language by five certainly has demonstrated more cognitive prowess than those who propose reformed alphabetical systems for beginning reading care to recognize. Too often, the motive behind teaching or not teaching phonic generalizations as well as that behind reformed alphabets is a condescension to children which excuses teachers from learning why English spelling is the way it is. Why learn something if it is too complicated for children to learn?, is the excuse which results in continued ignorance about English spelling.

Some scholars (Chomsky & Halle, 1968; C. Chomsky, 1970; Venezky, 1967a, 1967b; Weir & Venezky, 1968) have attempted to enlarge the approach to the study of English spelling. Their attempts have been received with the same degree of disinterest as reading specialists accorded Bloomfield (1933, 1942) when he tried to stick his nose into their business. Some reading authorities appear to believe linguistic inquiry is not relevant to reading. For this reason, Chomsky and Halle's hypothesis of abstract semantic principles underlying forms of English spelling which does not make it as irregular as purely phonic generalizations indicate, is not well received by reading authorities. They will not take the time to test this hypothesis to determine if its description of English spelling makes it a "near optimal system for representing the spoken language." To be fair to reading authorities, the program of studies required to become a reading specialist does not require the study of linguistics one needs to understand and appreciate what linguists are saying. And, the works of Carol Chomsky and N. Chomsky and Halle are couched in a jargon and explained with paradigms that obfuscate rather than clarify the semantic principles presented. To discuss the phonetic variants of words like medicate-medicine, sagacity-sage, photograph-photography-photographic and telegraph-telegraphic-telegraphy in terms of surface phonetic variations and deep structure similarities is at best an esoteric demonstration to prove intellectualism. The worst result of this type of insecure intellectualism is that it denies provocative ideas to teachers who desperately need them to teach more effectively.

An important study of spelling-to-sound correspondence was reported by Venezky and Weir (1966) and summarized by Venezky (1967a). The most readable for teachers is Venezky's (1967, p. 519) summary in which he concludes, "English orthography, rather than being a highly irregular phonemic spelling system, as

claimed by many linguists and educators, was a more regular and more complex system in which both sound and meaning shared leading roles." In another summary (1967a, p. 77), Venezky concludes that English spelling "is not merely a letter to sound system riddled with imperfections, but, instead, a more complex and more regular relationship wherein phoneme and morpheme share leading roles." Weir and Venezky (1968) attempt to shift the emphasis on English spelling from spelling-to-sound to other concerns. Hodges and Rudolf (1972, p. 93) suggest "a major hang-up with us regarding English orthography in relation to reading is an insistence on grapheme-phoneme correspondence. Adherence to this insistence has naturally led to the often cited inconsistencies." Wardhaugh (1969) reports that linguists generally have not been concerned with grammatical and lexical influences on English spelling, but have insisted that statements about the phonemic system make reference only to phonemic information. Such a view, according to Wardhaugh (p. 102), has "been dominant in American linguistics until very recently and has been behind nearly all work conducted so far into grapheme-phoneme correspondences."

The Study: A Look at the Influences of Phonetics, Semantics, Etymology, and Preference

This study has evolved over a period of 16 years. As it progressed, the perspective of grapheme-phoneme correspondence opened to include those of semantics, etymology and preference. This study is unique in that it was questions asked by those experiencing difficulty in acquiring literacy that both propelled it and enlarged its perspective to include an examination of the influence of semantics, etymology, and preference as well as that of grapheme-phoneme correspondence on English spelling.

The study began in the fall of 1964, when the author secured a position to teach a three hour block of language arts and social studies to eighth grade students who had not become literate after attending school from nine to 10 years. All of the students had not been promoted at least once; many of them had failed twice. At the time of signing the contract to teach these students, the author had taught sixth grade two years on an emergency elementary certificate. He had never had a course on how to teach reading. He had never had a linguistics course. He did not realize to what he had committed himself until he met his students. He was shocked.

Since he had the students for a period of three hours, he took them for walks in the city in which the school was located and his 20 students walked to the zoo, to the cemetery, to the university, to the jail, to mortuaries, etc. We walked. We talked. We wrote. The teacher could not read what the students wrote. The students could not read what they wrote. We walked more. We talked more. We wrote more. We did not read more.

Then one day our lives changed. We were at the zoo again. That day the apes put a show on for us. The students put on a

show for the apes. Eureka! Eureka! The heavens opened. Why not take dictation from the apes! Return to the classroom while it was still hot. Read it! Act it out!

We became linguists on ape talk. Then, one student suggested we study human speech the way we had ape talk. The walking decreased. The talking increased. We were confronted by English spelling. What could we do? What should we do? This study began. The dictionary was opened to find answers to questions these illiterate students asked about English spelling.

After two years of studying language with the type of students described above, the writer entered a program of studies to earn a doctorate with an emphasis in reading. As many linguistic classes as possible were taken. The gulf between the courses on the teaching of reading and linguistics was wide. There was more congruency between linguistics and what was accomplished with the eighth grade students than there was between this experience and the reading classes which had to be taken. The only similarities between the work done with these students and the reading classes occurred with reference to language-experience (Allen, 1961; Stauffer, 1970) approach to the teaching of reading. And, when language-experience was discussed, no indepth discussion of language and linguistic principles accompanied it.

It soon became evident that language was treated very superficially in most books and classes designed to prepare reading teachers and specialists. Esoteric topics like lateral dominance (Harris, 1957; Harris, et al., 1961) and reading problems; deficiencies in perception and neurological development (Delacato, 1959, 1963; Duggins, 1968; Frostig, 1964; Orton, 1928); and preferred learning modalities and multi-sensory approaches (Fernald, 1966; Gillingham & Stillman, 1966; Monroe, 1932; Woolman, 1962, 1965, 1966) took precedence over such a mundane and exoteric topic as language and consciously applying one's knowledge and competence of language in the acquisition of literacy. In fact, classes in these esoteric topics are what prepare one to be a reading specialist, not the study of language and how it is applied in literacy.

Should this writer have had these esoteric classes before committing himself to teaching those illiterate adolescents, language may well have not been the focus of our study. We may have spent our time crawling to correct a neurological deficiency (Delacato, 1959, 1963) or tracing words in sand with our fingers (Fernald, 1966) or searching for other modalities (Gillingham & Stillman, 1966). It is viewed as being a fortunate circumstance that apes called the writer's attention to language before a graduate program in reading was embarked upon. Those apes taught more language than was taught in all the reading classes taken.

After the doctorate was awarded, attention to illiterates and the questions they asked about English spelling became a focus again. A group of illiterate inmates at the federal correctional institution in La Tuna, Texas, was worked with for two hours a week for an academic year. The purpose was to develop situations which would stimulate those prisoners to ask questions about

English spelling as well as to have them explain why they believed they had not learned how to read and write.

The same type of program was conducted for six weeks in the summer of 1971 at the Job Corps Center in Shenck, North Carolina. The writer lived with the corpsmen and observed how they functioned with literacy. In order to develop a social relationship with the corpsmen, which would facilitate conversation, the writer did K.P. with them, dug trenches with them, mowed lawns with them, etc. In the evenings, he observed letter reading and writing and spelled words asked of him. Conversation flowed freely and questions were asked about English spelling. It was observed that the corpsmen were far more literate during letter reading and writing than they were in classes designed to improve their language arts skills.

Professional responsibilities in university work provided opportunities to work with college students deficient in literacy skills. Questions about English spelling were responded to and a record kept of them. Navajo students in grades four through eight contributed to the questions which directed this inquiry into English spelling. Third grade pupils contributed as the writer walked with a class of them for three hours a week for a school year. One day during a discussion on English spelling, a pupil said, "Our eyes pop out and plug up our ears." On the strength of this profound observation, a list of questions will be given which was asked when the eyes were kept out of the ears.

A Sample of Questions Asked

1. Why do words which end with a u sound end with a w?
2. Why do we use a y and not i in words such as type and rhyme, but not in like and kite?
3. Why do many words end with y?
4. Why does English spelling begin some words with the letter c when the vowel letter is a, o, and u, and other words with these same vowel letters with k?
5. Why does ph represent the sound /f/?
6. Why do we end many words with double l's, s's, z's, f's, and ck?
7. Why does the letter h combine with the letters c, g, p, s, t, and w to represent sounds?
8. Why do we have more ways to spell the long vowels than we do short vowels?
9. Why does the silent letter e end words like sneeze,

freeze, seize?

10. Why are the silent letters gh in some words?
11. Why do we begin some words with a silent k, w, p?
12. Why do the letters ch spell the sounds of /ch/, /k/, and /sh/?
13. Why does the letter c spell /s/ sometimes?
14. Why won't we end a word with j?
15. How many syllables are there?
16. Why do we spell the first syllable in women the way it is in woman?
17. Why do we use the same first four letters in health that we do in heal?
18. Why does two, twice, twelve, and twenty begin with tw?
19. Why do we spell and pronounce the words say, says, and said the way we do?
20. Does the C-V-V-C spelling pattern always mean the same thing?
21. Why do we have the C-V-C-E and the C-V-V-C long vowel spelling patterns?
22. Why do we use the w in so many ways in English spelling?
23. Why do we use the y in so many ways in English spelling?
24. Why does silent e end so many words?
25. Why do we drop silent e when we add -ed, -en, and -ing to words such as: take, write, cope?
26. Why do many two-syllable words like cotton, tanner, summer, little, and dinner, have identical double consonant letters when only one sound is heard?
27. How many vowels does English have?
28. Does English have specific ways to spell all of the vowels?
29. Why do the letter combinations ti, ci and si spell the /sh/ sound?

30. Why does g often spell the /j/ phoneme at the beginning of words?

31. Why are the letters ph used in spelling photograph in English and f is used in Spanish?

32. Why are the letters y and ch used in spelling psychology in English and i and c are used in Spanish?

33. Why does English use a silent p in spelling pneumonia and Spanish does not?

34. Why does English use the letters ch to spell /k/ in Christian and Spanish the letter c?

35. Why does English use the letter y in the word system and Spanish, i?

Questions like these led to the development of six hypotheses which formed the grid of abstract, coordinate ideas used to evaluate English spelling. The six coordinate ideas are: (1) phonemic distribution; (2) phonemic frequency; (3) phonics; (4) semantics; (5) etymology; and (6) preference. Each of the ideas is stated as an hypothesis.

1. Phonemic distribution within syllables influences how graphemes are used to represent one or more phonemes.

2. Phonemic frequency affects the variation "load" graphemes bear in phoneme-grapheme correspondence.

3. Phonics as an expression of relationships between phonemes and graphemes, while important, does not hold the highest priority in English spelling.

4. English spelling has as its highest priority the representation of semantic values.

5. English spelling often represents etymological information.

a. It may use graphemes which do not represent phonemic values in a word to indicate etymology.

b. It may use specific graphemes or combinations of graphemes to represent phonemic values as well as to indicate etymology.

6. English spelling often uses graphemes to satisfy preference:

a. for not ending words with a specific grapheme or a single kind of a consonant grapheme if the vowel is a particular type.

- b. indicating when a specific grapheme represents a phoneme.

This grid of hypotheses formed the "sieve" through which spelled words were pressed. As words were sifted through, it became clear that the spelling of many of them included two or more of those coordinate points identified as being phonics, semantics, etymology, and preference. Thus, it is not meaningful to conclude that n percentage of English words are spelled to only indicate value x or information y. Of course, some "pure" phonetic values are always represented in every word spelling. Often the representation of phonetic values is accomplished with graphemes or graphemic combinations assigned phonetic values as well as a semantic value, or etymological information, or to satisfy a preference.

To demonstrate how this grid of hypotheses is used to analyze English spelling, each one of them will be discussed. Words will be used to demonstrate each's efficacy as it relates to explaining English spelling.

Phonemic Distribution

To test this hypothesis, the focus was on the four basic syllabic patterns with a speech production unit of organized consonants (C) and vowels (V). The four are: (1) V; (2) V-C; (3) C-V; and (4) C-V-C. The capital V and C may represent one phoneme or a blend of phonemes as in he, oil; pan, plan. As can be seen, there are no consonantal phonemes in medial syllabic positions. Consonants appear only in initial and final syllabic positions. Vowel phonemes appear in initial, medial and final syllabic positions.

Looking at consonantal, phonemic distribution within syllables, we find all but five consonants appear in initial and final syllabic positions. Four of the five (/h/, /w/, /y/, /hw/) appear only in initial syllabic positions (hay, head; with, want; yard, yes; where, whim). One (/ng/) appears only in final syllabic position (ring, sang).

Phonemic distribution for vowels vary also. Those vowels which are described as being long or diphthongized (ate, teach, owe, I, cube) will appear in all four of the basic syllables. Those that are referred to as being short appear in the syllables V-C and C-V-C with a few exceptions. The main exception is the occurrence of short e in the V syllable in words such as e/choic and e/ffete.

The differences in phonemic distribution between what is described in phonics as being long and short vowels may well have caused the development of the idea of closed syllables for short vowels (V-C: add, it; C-V-C: bet, cup) and opened syllables (V: a/ble, o/pen; C-V: hoe, tea) for long vowels (Cordts, 1965; Durkin, 1970; Fry, 1977; Guszak, 1972). Like most phonic generalizations, this one too is useless. It does not make sense

linguistically because the distribution of several of the vowel phonemes, long as well as a number of those that are neither long or short, appear in all four of the syllabic patterns.

However, it is quite reasonable to conclude that silent e is added to the syllabic patterns V-C/V-C-E and C-V-C/C-V-C-E (ate, ice; tape, bite) to indicate when a vowel grapheme represents a diphthongized vowel. But, to teach that short vowels appear in closed syllables and long vowels appear in opened syllables is to demonstrate an ignorance of linguistic phenomena. By adding silent e to the syllabic patterns of V-C and C-V-C, contrasts are achieved for six graphic, syllabic patterns--two for short vowels and four for long vowels, since short vowels usually do not appear in the syllabic patterns: V and C-V. The six are:

Short Vowels

1. V-C
2. C-V-C

Long Vowels

1. V
2. C-V
3. V-C-E
4. C-V-C-E

Certainly, the distribution of vowel phonemes within syllables influenced the use of silent e on V-C and C-V-C to indicate a long vowel is represented by a specific grapheme. However, the use of silent e in many other functions makes it useless to memorize that a final, silent e means a long vowel is in the word or syllable.

Phonemic Frequency

Phonemic frequency and phonemic distribution have integrated functions in their influence on English spelling. The consonant phonemes to which the graphemes n, w, y, and wh were assigned to represent have a much lower frequency of use than do other consonant phonemes. A dictionary check and count of words which begin with the phonemes /h/, /w/, /y/ and /wh/ reveal far fewer of these words than words having initial phonemes such as /b/, /k/, /m/, /s/, etc.

Since the frequency rates of the phonemes /h/, /w/, /y/ and /wh/ are much lower than other consonants and their distribution is limited to initial, syllabic positions, they are assigned other functions to help resolve the problem of having more phonemes than graphemes as well as to satisfy specific preferences for not ending a native word with the graphemes i and u. We see the other functions of the grapheme h in the digraphic combinations of ch, gh, ph, sh, th and wh.

The digraph wh is a logical choice to represent the /hw/ phoneme since it appears only in initial syllabic position. And, the phonemes with which the individual graphemes w and h are associated appear also only in initial syllabic position. The choice of the digraph combination ch is also rational when one becomes aware of how this digraph represents the phoneme /k/ in words not

native to English. One of the phonemes c represents is /k/ (cut).

The hypotheses that phonemic distribution and phonemic frequency influenced English spelling are defensible. These two hypotheses help explain the spelling of such diverse words as:

Digraphs	Final <u>y</u> and <u>w</u>	V-C vs. V-C-E
church	fly	at - ate
laugh	my	odd - ode
photograph	biology	V-C-E vs. C-V-C-E
should	day	
them	cow	tap - tape
bath	allow	cut - cute
whine	new	rob - robe

Phonics

Since alphabetic writing depends upon stable correspondences between phonemes and graphemes, the motivating idea behind phonics is essential to the teaching of literacy. It is not the purpose of phonics we dispute. We disagree with phonic generalizations that were not derived through a scientific study of all the factors which influence English spelling. A scientific study of English spelling reveals that graphemes often represent more than phonetic values. Graphemes often represent more than sound. It is when a grapheme carries a "double load" or only a morphemic load that traditional phonics decrease in utility. That is, phonics fails to adequately describe all the factors present in English spelling.

Traditional phonics is adequate for describing and teaching the correspondences between most individual consonant letters and the phonemes they represent. A major exception to this occurs for the grapheme s and the phonemes with which it is associated. Traditional phonics is capable of describing the various functions of the vowel graphemes. Too much emphasis is given to those vowels referred to as being long and short at the expense of the other nine vowels. There are no defined graphic patterns for these nine vowels. In speech, these nine vowels (san-i-ty; bird; ball, jaw, bett-er; book, shoat, oil, brown) are phonemically distributed in all four of the basic syllabic patterns. In writing or print, they occur in all the graphic patterns phonics relegate to long and short vowels.

Phonic generalizations are too rigid to focus on the "forest" which entails the total writing system. Through traditional phonics, only "trees" are seen. A person learning to read and write is never guided to see the relationships between long and short vowel graphic patterns. One does not learn how the decision to use the syllabic patterns V-C and C-V-C as graphic patterns for short vowels necessitated the need to add silent e to these patterns if the same graphemes were going to represent long and short vowels.

Short Vowel

cap

Long Vowel

cape

Traditional phonics does not lead to an understanding of the contrasting functions of the long vowel patterns. These several patterns distinguish between or among our numerous homophones which have diphthongized vowels. Graphemic vowel combinations (ee, ea, ei, ie, ai, oa) serve to help achieve these contrasts we see in:

Long Vowel Patterns

C-V-C-C - C-V-V-C

V-C-C - V-V-C

C-V - C-V-V

Homophones

pale - pail
mete - meet - meat
there - their

ore - oar
ale - ail

be - bee - Bea
by - buy
see - sea

The general and superficial treatment of the C-V-V-C graphic pattern fails to guide students to discover that functionally there are three of these. There is one for long vowels (boat, maid, see, please, receive); one for vowel digraphs (book, shoot, soup, clause); and one for a blend of two vowels, usually called diphthongs in reading (boil, shout, brown).

Finally, phonics fails to assist students to see the relationships between the graphemic dropping of final silent e before adding an inflection, a derivational suffix, or a syllable which begins with a vowel. Phonics does not help students acquire the insight of why dropping final silent e created the need for the short vowel graphic pattern C-V-C-C plus an inflection, a derivational suffix beginning with a vowel, or a syllable beginning with a vowel. We see these in:

Short Vowel: C-V-C-C-+

tap - tapping
tapper
tapped
taps

Long Vowel: C-V-C-+

tape - taping
taper
taped
tapes

Of course, final e is dropped on C-V-C-E because of graphemic combinations like ee and ei, which serve in the long vowel C-V-V-C graphic pattern. If it was not dropped, adding -ing, -ed or -er would cause tape to be spelled tapeing, tapeded, tapeer. The decision to drop final e on C-V-C-E words, created homographs when adding -ing, -ed and -er to words like tap. To avoid creating homographs, the idea developed to double the final consonant

grapheme on words like tap which generated the short vowel graphic pattern: C-V-C-C-+.

We see the C-V-C-C-+ pattern in words like cotton, summer and little. There is a phonic rule which directs to divide words like robber, tanner and dinner between the double consonants. This is unfortunate, since it separates the second consonant from the vowel with which it is associated. It is more linguistically appropriate to divide the word after the second consonant (rubb/er and supp/er).

Phonics fails to adequately explain vowels because their use in spelling often has semantic implications as do consonants.

Semantics

Spelling to indicate semantic value describes more efficiently the variations among graphic patterns used to indicate long vowels than do phonic generalizations which fail to explain why there are so many. A focus on homophones having diphthongized vowels shows why long vowel graphic patterns are extended beyond that of adding a silent e to V-C and C-V-C syllabic patterns. Let us look at these extended graphic patterns with semantic contrasts in mind.

Semantic Contrasts	Homophonic Examples	
Set I: C-V-C-E/C-V-V-C	bate - bait whale - wail lone - loan	cole - coal pale - pail mule - mewl
Set II: C-V-V-C/C-V-V-C		
1) ie ee	bier - beer	pier - peer
2) ea ee	meat - meet	peak - peek
3) ea ie	peace - piece	tear - tier
4) ea ei	sealing - ceiling	teal - teail
5) ai ei	rain - rein	faint - feint
Set III: V-C-E/V-V-C	ore - oar	ale - ail
Set IV: C-V/C-V-V	be - bee - Bea so - sew - sow	
Set V: C-V-V/C-V-V	sea - see flea - flee lie - lye hay - hey	tea - tee hue - hew mue - mew roe - row

In some homophones having two or more syllables with one of them having the schwa, semantic contrast is achieved by using different vowel graphemes to represent the schwa. We see this in homophonic pairs such as: navel-naval, better-bettor, bridal-bridle, capital-capitol, censor-censer, coral-coral, council-counsel, dual-duel, idol-idle-idyl, and lesson-lessen.

Some consonantal graphemes are also used to achieve semantic

contrast. Since the phoneme /s/ may be represented by either c or s, semantic contrast is achieved by the use of these two graphemes as in: cession-session, cetaceous-setaceous, cite-site, cell-sell, proceed-seed, fence-defense, cent-sent-scent, and cymbal-symbol. This same process is seen in weasel-weazel.

English spelling also uses the graphemes k and w to achieve semantic contrast on some homophones. When these two graphemes are used to achieve semantic contrast, they do not represent phonemes. Some examples are:

Semantic Contrast: K

knave - nave
knew - new
knight - night
knit - nit
knot - not

Semantic Contrast: W

wrap - rap
wring - ring
write - rite
wrote - rote
wrest - rest

In some words, semantic representation is preserved by retaining the same spelling of a morpheme even when the vowel phoneme shifts from one sound to another. We see this in:

Original → Shift

woman - women
vine - vineyard
sage - sagacity
telegraph - telegraphy
malign - malignant
abolish - abolition

Original → Shift

heal - health
expedite - expeditious
revise - revision
anxious - anxiety
sign - signature
compete - competent

A grapheme which represents no phoneme in one use of a morpheme may be retained because it does represent a sound in another use of the phoneme. This occurs in:

Silent Grapheme — Sound

sign	signature
bomb	bombard
condemn	condemnation
malign	malignant
soften	soft

N. Chomsky and Halle (1968) and C. Chomsky (1970) go into great detail explaining how phonemes shift from one morpheme use to another. Their explanations are worth studying. Even though we do not feel their transformational strategies are essential to explaining the role of semantics in English spelling, we are indebted to them for stimulating our intellects and giving us a more inclusive view of English spelling. The same indebtedness is owed to Venezky (1967a, 1967b) and Wier and Venezky (1968). Venezky's work encouraged and supported our efforts to understand

the role of preference in English spelling.

Preference

There are some facets of English spelling which appear not to do anything more than satisfy preferences. Silent e at the end of a one syllable word or the last grapheme on a final syllable in a word is frequently used to satisfy preferences. Such applications occur in the following linguistic environments:

1. When the final phoneme in a word is /v/, silent e is added, as in: love, give, dove, receive, believe, massive, active.
2. When the final phoneme is /j/, the grapheme g represents it. Silent e indicates when g represents /j/, as in: bulge, fudge, beige, pledge, adage, advantage.
3. Silent e indicates when the grapheme c represents /s/ at the end of a word, as in: fence, glance, dance, peace, pierce, neice, since.
4. Silent e indicates when the digraph th at the end of a word represents the voiced /th/ phoneme, as in: teethe, wreathe, seethe, soothe.
5. Silent e ends words having the final phoneme /z/ when the vowel is long, as in: sneeze, breeze, seize, squeeze, freeze.
6. Silent e indicates when the graphemic combination qu at the end of a word represents /k/, as in: plaque, technique, claque.
7. Silent e indicates when the final grapheme s does not represent an inflection (cows, walks), as in: please, tease, house, purse, increase, horse, nurse.

English spelling satisfies some preferences by doubling the final consonant grapheme. This occurs if the vowel is short in a one syllable word or in the last syllable of a word and if:

1. The last phoneme is /l/, as in: well, fell; kill, hill; hull, full; shall. If the vowel phoneme is that described as being a broad /a/, the l is also doubled, as in: wall, call, fall, small.
2. The last phoneme is /s/, as in: lass, bass; mess, confess; miss, kiss; moss, boss; cuss, fuss.
3. The last phoneme is /f/, as in: staff, stiff, scoff, bluff, cuff.

4. The last phoneme is /z/, as in: razz, fizz, buzz.

5. The last phoneme is /k/, the graphemic combination ck is used, as in: black, stack; peck, neck; pick, stick; clock, stock; stuck, buck. It is reasonable to conclude that words like these would end with double k if English did not have the grapheme c. This reasoning is based upon the words which end with double i, f, s, and z.

Final e may serve two functions in some words. That is, it may indicate a long vowel as well as satisfying preferences as in face, lace; rice, nice; age, rage; amaze, gaze, huge.

English spelling prefers not to end native words with the graphemes i and u. To satisfy this preference, it takes advantage of the fact that in phonemic distribution, the consonantal phonemes /y/ and /w/ will not appear in final syllabic position. So, the graphemes w and y are used to satisfy these preferences, as in now, allow; blew, few; blow, show; why, by; boy, alloy; day, pay.

With an appreciation of the roles of semantics and preferences in English spelling, the words say, says, said; two, twice, twelve and twenty are enriched. The word said uses an i rather than a y because the grapheme d keeps from ending the word with an i. The spellings of say, says, and said indicate the same semantic value is behind all three. The tw in two, twice, twelve and twenty represent the concept of twoness. We prefer to spell two to show its relationship to these other tw words.

Etymology

English has one of the most, if not the most, expansive vocabularies of any language. It has a system of spelling which indicates that many of its words are not native. This is accomplished by: (1) Spelling words as they are in their native language. (2) Using specific graphemes to spell morphemes native to Greek and Latin. Some of these graphemes represent phonemes while others do not. (3) Using the graphemes c and k to distinguish between etymologies that are not Greek and Latin.

The spelling of whole words the way they are spelled in their native language occurs for words from Spanish, French, Russian, etc. Some examples are:

Spanish	French	Russian
lariat	avenue	knout
avocado	boutique	kolinsky
coyote	plaque	kvass
lasso	antique	kulak

To indicate the etymology of Greek and Latin morphemes, English uses the graphemes h and p. These graphemes do not represent phonemes. We see this in such words as: psychology, pneumonia, pterodactyl, ptomaine, pseudonym; rhythm, rhyme, rhinoceros,

rhetoric, rhapsody. This hypothesis may be checked by comparing the spelling of these words to that in Spanish. In Spanish, pneumonia is spelled neumonía; pseudonym is seudónimo; psychology is psicología, and ptomain is ptomaína. Spanish sometimes retains the p. Rhinoceros is spelled rinocuonte; rhythm is ritmo; rhyme, rima; rhetoric is retórica; rhapsody is rapsoía. In these words, the grapheme h is omitted.

English spelling uses the digraphs ph and ch to indicate Greek and Latin etymology as well as the graphemes y, z and x. When these represent etymology, ph indicates /f/, ch indicates /k/; y represents a vowel; z and x represent /z/.

This may be verified by comparing the English and Spanish spelling of words which share morphemes native to Greek and Latin. Here are some examples:

English	Spanish	English	Spanish
<u>ph</u>		<u>ch</u>	
telephone	telefonar	character	carácter
telegraph	telégrafo	Christian	Cristiano
phosphor	fosfaro	chlorine	cloro
<u>y</u>		<u>x</u>	
system	sistema	xylophone	xilófono
cycle	ciclo	xerron	xerron
dynamite	dinamita	xiphoid	xifoideo
	<u>z</u>		
zealot	celador	zephyr	céfiro
zone	zona	zoology	zoología

A study of the functions of these graphemes in many words and comparing English and Spanish spelling suggest that they, these phonemes, are doing two things. One, they represent phonemic values. Two, they indicate a Greek or Latin etymology. English spelling is far more concerned with etymology than is Spanish. However, some Spanish spellings do indicate etymology.

The use of c and k to distinguish between or among etymologies is not as clear cut as are the use of the graphemes discussed above. Yet, many of the words which begin with the grapheme k have etymologies that are neither Latin or Greek.

The digraph gh indicates English etymology. Out of 52 words in which this digraph appears, only one has an etymology that is not English. The word is plight, and its etymology is Old French. Most of the words having gh in their spelling have the Old English etymology.

When gh represents /f/ in final syllabic position, it may well satisfy the preference for not ending a word having a short vowel (laugh) or the vowel heard in jaw with a single f grapheme

(cough, trough, as well as rough and tough).

Conclusions

Shaw's Ghoti Story about English spelling should not block a systematic study of it. There is ample evidence that the evolution of English spelling has formed a system which represents more than phonetic values. One may find encoded in many graphemes semantic, etymological and preference information as well as phonological cues. If all these values are not understood and appreciated, then English spelling is a morass of confusion. Traditional phonics tends to generate a morass of confusion because the focus of its principles and generalizations are only on phoneme-grapheme correspondences.

If this writer's studies to become a reading specialist had begun in a university classroom rather than at an ape house, English spelling for him may well have become a morass of confusion. Apes and illiterate humans may well have as much to offer students of reading as do textbooks on this subject. It was apes and illiterates who have motivated this reading specialist to study language as it relates to the acquisition of literacy.

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FROGS INTO PRINCES:
Conflict between Organizational Structures
as Revealed by Forms of Address

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0. Introduction

Using a stratificationally-oriented model of behavior, we have in recent works examined the use of certain forms of address to maintain and highlight status differences between staff members in a large bureaucracy (The Second Foundation 1979, 1980).¹ The present work addresses the question of how the conflict between two different types of power structure in one organization is revealed through forms of address. To do this, though, we would first like to present the reader with a brief introduction to our theory of organizational structures as it relates to the data to be considered in Section 2.²

1. Two Types of Power = Two Types of Organization

In one type of power structure--typical of bureaucracies--power is generated "from the top down." In such a structure, forms of address reflect a rigid status hierarchy. Another type of power structure is one in which power is generated "from the bottom up": leaders are imbued with power only insofar as they receive the support of their constituents. In this type of structure--typical of labor unions--the use of forms of address serves to play down status differences and maintain an illusion of equality.

Power within a union is chiefly particularistic, in contrast to the chiefly universalistic power of a bureaucracy. Although the highest-ranking staff members of a federal bureaucracy are appointed by the president (an instance of particularistic power), entrance into the lower echelons of the bureaucracy depends on an examination or the possession of certain credentials of certification (an instance of universalistic power). Power within a union, on the other hand, means being able to muster votes at all levels of the organizational hierarchy. This process entails many personal obligations and is therefore another instance of particularistic power, power based on personal contacts or charisma.

The role of professionals in either type of organization threatens the power structure upon which the organization is founded. The nature of professionalism is control of one's work space, but autonomous control of the work place by individuals is in conflict with the needs of a large organization, be it labor union or government bureaucracy.

For example, in the bureaucracy under study (the National Institute of Mental Health), positions in the direct chain of

command are regularly held by professionals, something of an anomaly as organizational structures go. Psychiatrists enter the bureaucracy at relatively high levels, a practice which conflicts with the belief of other federal bureaucrats that advancement in the hierarchy should be a step by step process from lower levels to higher. The resulting antagonism makes the use of professional titles all the more necessary to establish the power of the professionals.

In the case of the labor union, professionals are hired as regular employees, directly responsible to supervisors who do not themselves possess professional certification. Professionals hired as staff are resented by others because the professionals have evaded endorsement by the rank and file. Hence they experience difficulty when they try to call upon the use of titles to accentuate their position and power.

The data which we will now examine illustrate how the continuing efforts of certain individuals to enforce the use of professional titles clashes with the relatively egalitarian usage of the other staff members of a large labor union.³ In essence, it is the methods of one type of power structure against those of another.

2. The Conflict

Since our space is limited, we will restrict ourselves to discussing only two illustrations of the conflict in title usage that occurs between professionals and the non-professional staff of the labor union. To begin with, the use of first names is the unmarked form of address for all staff members; even the persons at the highest levels of the organization may be addressed with their first name by persons at lower levels.

This is not unusual when considered in the light of the nature and function of a union. The purpose of the union staff is to assist in collective bargaining, which leads to an "us versus them" attitude vis à vis the company which employs the union's members. The power of the union as a whole derives from the cohesion between the members, and the use of the first name as an indicator of familiarity and solidarity helps to sustain the cohesiveness of the organization.⁴

There are some persons, however, who attempt to impose a more hierarchical structure on dyadic interactions, a structure based on status differences rather than similarities. These efforts usually meet with little success. For example, one professional requires his secretary to address him as "Dr. XYZ," but his supervisor's secretary insists on calling him "Frank," much to his chagrin. In another case, an individual introduced himself to the director of the union's athletic club as "Dr. ABC," whereupon the other man quipped, "You'd better be careful, doc, or somebody'll ask you to operate!"

We believe that there are two different structures which interact to produce behavior such as that given in these two examples. One structure underlies the behavior of the professionals

and serves as their model for interpreting interactions with other staff members, while a similar (but not identical) structure underlies the behavior of the non-professionals and serves as their model for interpreting interactions. These two structures are given in relational network form in Figures 1 and 2.

Figure 1 illustrates the structure used by non-professional staff members (NonPro). The topmost AND node defines a generalized SPEECH ACT which is composed of a SPEAKER, a MESSAGE, and an ADDRESSEE. If a reference to the ADDRESSEE occurs within the MESSAGE, the second person pronoun /2Ps/ may occur.⁵ As the diagram indicates, the OR nodes labeled ADDRESSEE and SPEAKER allow various possibilities, only one of which is depicted here.

We believe that the speakers of a language know that in a particular environment, only certain individuals are likely to occur as SPEAKERS or ADDRESSEES. Moreover, there may also be restrictions as to which participants can take which role. Figure 1 contains an AND labeled WORK, which symbolizes part of the speaker's knowledge of the surroundings; when this node is receiving sensory input, the individual perceives himself as being "at work." The network in Figure 1 accounts for the fact that at work, ADDRESSEES may be called by their first name (FN), and that any member of the staff may take either the SPEAKER or ADDRESSEE role.

Figure 1: The non-professional's point of view.

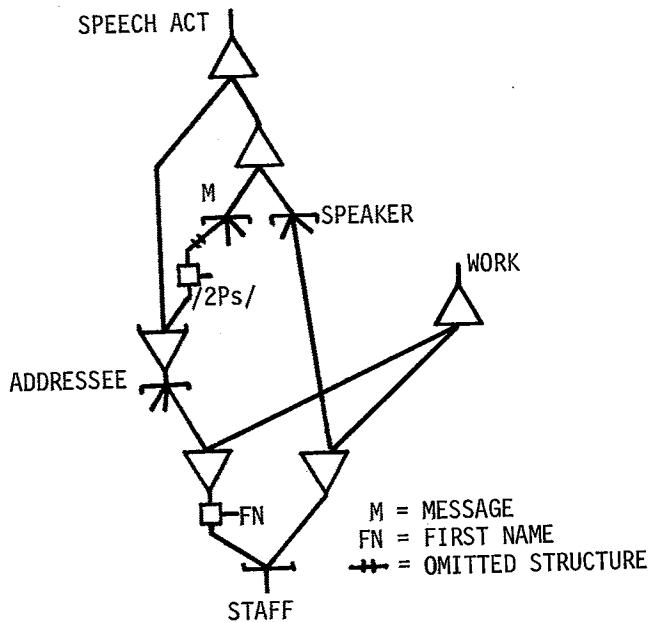


Figure 2, in contrast, represents a structure we believe to underly the behavior of professionals of the type that appears in the data. Here the general form of the SPEECH ACT is the same as that for the non-professionals down to the level at which the environmental influences condition various combinations of SPEAKERS and ADDRESSEES; after this point, the two diagrams diverge rather radically.

If a professional of the sort in question is the SPEAKER, node (a), he or she may address any other staff member the the first name, as indicated by the configuration of nodes (b), (c), and (d). If the SPEAKER is a secretary, node (e), however, the secretary is expected to address non-professional staff members with first names--nodes (f), (g), and (h)--but a professional with the title "Dr."--nodes (f), (g), and (i).

The problem is even more complicated than these two figures indicate, for they show only the unmarked forms of address for each combination of SPEAKER and ADDRESSEE. For most staff members the use of the first name is the expected or unmarked form of address in interactive with others at work. The occurrence of something else, "Dr.," for example, indicates that the SPEAKER has communicated some change in his or her perception of the interaction, perhaps an increase in the social distance between the participants.⁶

For some professionals, as we have seen, it is the first name form of address which is marked in contrast to the expected or desired "Dr." Of course, the status of a form of address as marked or unmarked is dependant upon the environment in many cases; it is likely that if a professional and a non-professional participate in social activities together outside of work, the professional would perceive the use of "Dr." in such situations as highly marked.⁷

3. The Resolution of Conflict

The only real way to resolve the conflict illustrated by the data would be for professionals and non-professionals to learn each other's system of titles and markedness relations and either (1) change their attitudes to them, or (2) try to use forms of address to avoid friction at work. Knowledge of address behavior can be very powerful in and of itself. Telling people what they want to hear will indeed often work to one's advantage, just as ignoring people's titles in certain cases may prevent them from becoming too "uppity."

The use of titles can also service to enhance one's own prestige and authority, if the titles can be made to stick. The professionals in the labor union do not often succeed, but that is not to say that it is impossible; they may simply be going about it the wrong way.

We conclude, then, with a piece of advice to both those who wish to disarm power and to those who wish to wield it: if what you're doing doesn't get you what you want, do something else.

NOTES

- * We are indebted to a number of participants in the 1980 LACUS Forum for their comments and suggestions. Hank Rogers provided much valuable discussion, as did Helen Ullrich. More specific proposals by other persons are mentioned below. Further comments concerning our work and related matters will receive a hearty welcome at either of the addresses below:

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We confess to snitching our main title from Bandler and Grinder's book of the same name (1979); we feel that all students of human communication should read both it and their other books, Bandler and Grinder (1975) and Grinder and Bandler (1976). We would like to thank William Acton for additional information on neurolinguistic programming.

1. We use the term "bureaucracy" in the restricted sense of "an administrative organization of the federal government controlled primarily by appointed rather than elected officials."
2. The reader wishing a more sociological discussion of some of the points touched on here may find the following works of interest: Vollmer and Mills (1966), Gilb (1966), Friedman (1970), and Hughes (1971).
3. The data are anecdotal in nature due to the fact that the female co-author served as both an employee and an observer of the union in question. For a discussion of the principles involved in participant observation, see Festinger et al. (1956).
4. Even kinship terms are pressed into service: memos are addressed to "Brother A" and "Sister B," and close with "fraternally yours."
5. This representation of the SPEECH ACT draws heavily on Johansson (1976). For further discussion, see Bennett (1980) and The Second Foundation (1979). The latter article also provides a brief description of the realization of FN and "Dr." in conjunction with names. Sullivan (1977) contains a general introduction to the treatment of names in a stratificational framework.

6. William Sullivan suggests (personal communication) treating the first name element FN as unmarked. This would indeed result in a simpler network, but we are still not sure of the nature and determination of "marked" and "unmarked" forms of address; for this reason we have left everything explicitly marked. For a discussion of the problems and general methodology of this subject, see Brown and Gilman (1960) and Ervin-Tripp (1972).
7. Jay Hammond has suggested (personal communication) that it is also possible that certain individuals are aware of both systems, thus allowing them to shift back and forth between them to achieve certain ends of their own. For an account of a similar situation among multi-linguals, see Scotton (1976).

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POUND'S CANTOS IN HUNGARIAN
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In meditating on my translation of Ezra Pound's Cantos into Hungarian, completed over five years ago, it has become increasingly clear that while the translation of poetry is an exercise in identification, writing about translation is an exercise in alienation. As the polysemous nature of the word indicates, "translation" means both aesthetic object and linguistic process, the latter securely embedded in the former. But when one is trying to answer the question, "How did you do it?", one is forced to dis sever the unity of the object/process, and also to invert its ontological status: end product is now taken for source so that the object would yield the hidden process.

Any poetic translation is generally supposed to be based on certain principles of translation; there are linguists and critics who even speak of the "science" of translation.(1) I cannot claim to have possessed a clearly defined theory prior to my work on the Cantos; I did have models and a method, the latter evolved in practice, which I would now call spontaneous substitution. The reconstruction of the process is therefore a tentative one, and my "principles" are little more than ex post facto rationalizations of my present "I" based on the ghost-like presence of my former "I" immanent in the body of the text. This disjunction of selves, the inescapable changes in the human organism can ultimately be blamed on Time. "Time is the evil", wrote Pound in Canto XXX; the truth of this statement cannot but impress itself on the ex-translator as he sets out in search of his once-alive translator-self and his once-real activity: his "translatorship".

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Before attempting to re-enact the process and to answer the "how", I will briefly deal with the "why"-- why Pound? My reading of Pound goes back over twenty years when as a budding Hungarian poet and newcomer to North America I became an ardent follower of the modern English and American poets. They opened my eyes to heretofore unimaginable poetic realms, and in particular I was fascinated by the techniques and methods of Pound and Eliot, both of whom I translated in early 1960. The

decisive event occurred the following year when for a birthday gift I received the Cantos of Ezra Pound. This unexpected act of friendship has changed my life.

I began to read the Cantos, and it was comforting to read years later that the learned opinion of eminent Pound scholars coincided with my initial impression: that the poem is the most audacious and monumental modern work in the epic tradition; that Pound invented a new form by eschewing logic and transition in his composition in favour of a poetic version of the collage and montage, and instead of a ratiocinative cause-and-effect narration a total field of meaning is achieved by the constant interaction--the "collision"--of juxtaposed linguistic fragments, revealing hidden relationships and laws existing behind perceptible phenomena. I came to consider the poem a new Divine Comedy, the most complex and faithful image of our century. (2)

I was more than discomfited to learn that Pound and his work have been systematically ignored in Hungary. It is a peculiar feature of Hungarian literary consciousness that although it has generally been receptive to, and influenced by, Western literature, more often than not recognition came belatedly and to works of moderate significance. Pound was perhaps the most neglected of all major modernist authors; as late as 1966 his poetry was largely unknown and untranslated. (3) It seemed natural that I should turn my knowledge and enthusiasm to good account, so I translated some half a dozen cantos into my mother tongue.

In 1967 I visited Hungary for the first time since my escape in 1956. I took the translations with me and showed them to a few poets and critics who were very encouraging and urged me to continue and produce "the first Hungarian Pound". (4) After my return to Montreal I received additional support from friends and also from colleagues in Paris, and so I began the work that was to occupy me for the next eight years.

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I started by re-reading the Cantos with a more attentive, critical eye. Roland Barthes said, "Lire, c'est désirer l'oeuvre, c'est vouloir être l'oeuvre. . . . Passer de la lecture à la critique, c'est changer de désir, c'est désirer non plus l'oeuvre, mais son propre langage". (5) If I put "traduction" in place of "critique" the statement describes accurately the kind of reading I was doing and can approximate the shift from desire of reading for possession to desire of reading for translation; though I realized possession must precede the act of translation.

During this very intensive reading for translation I also came to realize that in my earlier versions I had been translating the words. They sounded wooden, unreal,

"poetic"--in short, dead. As Aloys Skoumal wrote, "On peut désigner, à juste titre, certaines traductions par le mot latin *translatio*, qui veut dire, originairement, le transfert d'un cadavre dans une nouvelle tombe".(6) This was certainly true of my translations, with this difference that the Cantos was (still is) very much alive; it was my translatio of mere words that annihilated it. So I promptly annihilated them in return.

Along with their destruction came the realization that the model on which these early versions were based, the tradition of the Hungarian poet-translators grouped around the review Nyugat /"Occident"/, was no longer useful to me. Although remaining fanatically faithful to the original poems' rhythm and rhyme, these translators showed an amazing lack of fidelity to what I would now call the contextuality of the poems' language, mainly because they did not know the source language and its socio-politico-cultural context well enough. It is not surprising that the most famous of the Nyugat translators coined the pun "*fordítás: ferdítés*", the Hungarian version of "*traduttore: traditore*", and whose motto was, "To translate means to dance with shackles on hands and feet".(7) I, too, wanted to dance, but without shackles.

Another (and obvious) model was Pound himself, the renowned translator of Cavalcanti, Arnaut Daniel, Confucius, Sophocles, and many others. Some of his best known translations were not translations at all: they were really Pound poems inspired by poems in a foreign language.(8) I was not sure I wanted to go that far and appropriate--"possess"--the language of Pound to the extent that it become intrinsically my own. Pound himself flashed the danger signals for me when he related his attempt to translate Aeschylus' Agamemnon: "I twisted, turned, tried every elipsis and elimination. I made the watchman talk nigger, and by the time you had taken out the remplissage, there was no play left on one's page".(9) Although he abandoned the Agamemnon, years later he used almost the same devices (archaisms, slang, black colloquialisms, dialects and idioms) when "translating" Sophocles' Women of Trachis. It was a most exciting adaptation but it was almost exclusively a work of Pound's; thus Pound had transgressed his own maxim, "We test a translation by the feel, and particularly by the feel of being in contact with the force of a great original".(10) I adopted this as my motto; this is what I wanted for my cantos as I was not interested in writing a Géfin poem vaguely based on Pound.

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Yet I did not want to translate "words"; I did not want a lot of dead bodies on my hands. I realized that I had to depart from the original; but before moving to my own language horizontally, I sensed intuitively that

first I had to descend vertically to some unknown territory. For if one does not translate "words", just what can one translate? "As the poet begins by seeing, so the translator by reading; but his reading must be a kind of seeing"--yes, but seeing exactly what?(11) Wallace Stevens said, "Every poem is a poem within a poem; the poem of the idea within the poem of the words" (12); but what does this mean for a translator? At any rate, I was Poundian (or Humean) to hold that "an idea is only an imperfect induction from fact".(13) All facts carry about with them their inseparable couleur locale; how can a translator capture these facts in their living state and carry them over intact into the words of his own language? As the Cantos is a gigantic collage of juxtaposed and mutually interacting particular facts embedded in Pound's English, suddenly every word in the poem began to look weighted, loaded with meaning; ideas and facts seemed to intermingle in a vast complex of mythical, historical, social, and artistic strata, overlaid and criss-crossing each other in profusion.

I became utterly dejected, and in addition to the "poem of the facts", I now perceived the very great difference between the "words" of the source poem and my own Hungarian, one non-inflective and in word-order following the natural sequence of agent-action-object, the other inflective and agglutinative. I nearly resigned myself to the view that "the semantic mapping of the universe by a language is, in general, arbitrary, and the semantic map of each language is different from those of other languages".(14) Consequently, translation can never be just: "it's only a series of compromises".(15) Bogged down in a mire of dualities, and not wanting to compromise, I found myself unable to translate. I ground to a halt even before I began.

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Feeling miserable, nevertheless I continued to read the Cantos desultorily. One evening, as I was looking at the first few lines of Canto II, "Hang it all, Robert Browning, / There can be but the one Sordello", I suddenly heard a voice inside my head saying: "Üsse kö, Robert Browning, / Nincs több, csak az az egy Sordello!" I immediately wrote this down, then stopped and reflected. The Hungarian idiom "üsse kö" (literally, "lightning strike it"), was not a "just" or "exact" translation of "hang it all" but somehow it had the right feel, the richness of context, and the correct propinquity of attitude. It was not literal and it was not wholly "appropriated" either; I had to acknowledge that the source poem became so internalized that after a period of gestation it engendered, unexpectedly and near-automatically, emotionally equivalent textual wholes in the target language. By a re-reading of the

original lines, I triggered "my poem", hidden but all the while growing in the unconscious, to erupt and assert itself. When first learning English, I was constantly admonished, "Don't translate! Think in English!" I now recognized that instead of suppressing either language, part of the translator's job was to re-establish connections between languages--not rationally and "scientifically", not on the level of words, not even on that of ideas or facts, but somewhere deeper, as I had first surmised, in the realm of the pre- or proto-conscious where all human mental activity, including language, originates. The words, both as sounds and signs, encompass ideas, facts, images; but as Shelley said, "The deep truth is imageless"; and the translation from one language to the other must take place in this realm of "deep truth". I came to believe firmly that "languages are not strangers to one another, but are, a priori and apart from all historical relationships, interrelated in what they want to express".(16) Thus is translation in essence a work in identification.

Most of the above, as I had forewarned, is reconstruction in hindsight. In that now distant flash of insight or revelation I knew that the time to dance without shackles had finally come. In a state of inspiration I completed Canto II that same evening; next day I made a new version of Canto XLV. I knew I was on my way.

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The new process of translation did not resemble my earlier efforts which were purely intellectual, imitative, and reductive. Although of course not always an inspired "automatic writing", my work was nonetheless different from translation in the literal sense; this process I would now call organic substitution. There were no several steps, no translations in the rough; if the Hungarian canto did not, at least in the beginning, bubble up to the surface spontaneously and convincingly, then I stopped writing, just as a poet would when his stream of inspiration suddenly ceases to gush forth, continuing only when the right textual flow resumed its course. The intellect was certainly not disconnected, though it played a relatively minor role. Continued reading of the Cantos, research, digging into some of the more esoteric facts in the poem were the work mainly relegated to the intellect; it and the emotions were combined in a heightened listening in anticipation of the flow of words.

I listened for images, music, truth in the light of Pound's possible intentions. Before setting a line down on paper, the Hungarian words were always spoken aloud first, allowing the intellect to intervene and collaborate with the emotions in the final shaping.

In this shaping a number of techniques evolved to deal with various contingencies. Images could be transposed almost without loss but where rhythm or musical phrasing seemed to predominate, I did not mimic Pound's meter in the Hungarian but using what I would call rhythm exchange, I employed rhythms that produced an equivalent melopoeic intensity to Pound's original. For idioms and the translocation of culture-bound text components, I used comparative cultural parallelling. It is at these junctures that literal translators usually feel, and obey, the urge to append footnotes (as, for instance, a quote from Shakespeare will enrich the text for most educated English and American readers, while it will lose much of its allusive power in the target language). In my cantos I have not used footnotes; for literary allusions, quotes, paraphrases intended to evoke particular cultural data I intuitively produced lines which I felt would create an intellectual-emotional atmosphere equal not simply to the original but to its "deep truth"; in other instances I left words in English to accentuate the "strangeness" of the source. I used linguistic compensation where several possibilities in the target language seemed to offer themselves beyond the literal version, choosing usually a phrase which is "more Hungarian" than its counterpart is English. I did not intend this as an improvement on Pound but have simply "guessed" that the poet would in all likelihood have employed the phrase had he been writing the Cantos in Hungarian.

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In the remainder of these reminiscences I would like to briefly illustrate these three aspects of my methodology.

In Canto I Pound uses rhythms and alliterations characteristic of Anglo-Saxon poetry. Not having in Hungarian literature a national epic comparable to Beowulf, I "exchanged" the stressed lines for Hungarian alexandrines, lines of twelve syllables and four strong stresses separated by a caesura. This line had widespread popularity among 16th century minstrels where secular Hungarian poetry had its origin. As part of Pound's intention is to point to origins by the use of Old English rhythms, my choice alludes to identical poetic beginnings. Canto XXX opens with a rather free adaptation of Chaucer's "Compleynt unto Pity"; here I used a more urbane and refined rhythm to be found in 17th century love lyrics; ("used" is incorrect: the lines "Panasz szót, jaj panaszt hallék egy napon, / Jaj szóval Artemis, Artemis dalolt" in response to "Compleynt, compleynt I hearde upon a day, / Artemis singing, Artemis, Artemis" came spontaneously; only then did I begin to continue consciously with the same tone

and musical phrasing). I was able to attain a genteel archaic atmosphere, intimating also that my lines were not "original" but contemporary.

Dialects were dealt with by parallelling. When for example in Canto XVI Pound mimics German in English, I could successfully obtain an identical effect by imitating the dialect of German settlers living in Hungary. When Pound presents the voices of some black GI's from the American South in "The Pisan Cantos", instead of substituting the more obvious choice, the vernacular of Hungarian gypsies, I hit upon the peasant dialect of my home county of Vas, or more precisely the Kemenes district where I grew up. The accents and diction of rural folk parallel both the possible historical context and the human frame of reference of the original: the dignity, decency, and compassion of southern black people experienced first hand by Pound.

Compensation was used throughout the Cantos; a characteristic example may be cited from Canto I. In one episode the ghost of a dead companion appears to Odysseus in Hades. Odysseus is suddenly reminded that they did not have time to bury the body: they left the dead sailor "unwept, unwrapt in sepulchre". Pound expresses the double negligence by the use in both words of the privative prefix un- and by the nearly homophonic wept and wrapt as if to combine and amplify the omissions. In the Hungarian an even more striking effect could be achieved by the use of the word sír, a homonym meaning the verb "to weep" and also the noun "grave" or "tomb", so that the neglect of the two ritual acts hits Odysseus with double force: "El se sirattuk, sírba se tettük". The line's dactylic and spondaic beat, metres as natural in Hungarian as they are stilted in English, gives the right emphasis to the word, and the sudden juxtaposition is fully in the spirit of Pound.

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If, finally, there may be any lesson to be drawn from my practical translatorship, it may be summarized as follows: 1. The translator must have a supreme familiarity with the language from which he translates; 2. he must "live" in the closest possible intimacy with the poem in the source language and with that poet's entire oeuvre, plus his entire artistic, cultural, and historical milieu and tradition--in short, with the work's contextuality; 3.- the translator himself must be a poet of some accomplishment in the target language and he must have the knowledge to wait patiently for the spontaneous surfacing of the common poem in his own language. His method must be flexible and variable, for, as Pound said, "It is not that one language cannot be made to do what another has done, but that it is not always expeditious to approach the same goal by the

same alley."(17) This would mean that the translator must be an "inventor in language", discovering new avenues of expression in his own language.

But also, this last statement by Pound would signify that he, too, believed in the existence, beyond signs, sounds, images, of a common ground for all languages in what they intend to convey. This ground is what I tentatively named the realm of the "deep truth", the Heraclitean "latent structure" upholding obvious structure, the law signifying the essential oneness of the entire universe. The translator, then--by first "possessing" his source work and its language, and by descending to this archetypal state of mind and re-emerging from it with the "possession" metamorphosed yet still identical with the source--is, ultimately, the maker of a synthesis which resolves all the self-constructed and self-paralyzing dualities of man. In his translatorship he is an alchemist; his translation a coniunctio oppositorum. In this synthesis Time is annulled and its "evil", its alienating power, is temporarily checked.

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On this note of optimism I release the ghost of my ertswile translator-self, with due thanks and apologies for having disturbed his rest. Requiescat in pacem; and let his accomplished work, now reunited once more, attest to his ardour, and continue to move and inspire the living. The term "living" is intended to include the person who is now writing and saying these words.

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NOTES

(1) Cf. E.A. Nida, Towards a Science of Translation (Leiden, 1964).

(2) The best study of Pound's poetic method to date is still Hugh Kenner's The Poetry of Ezra Pound (London, 1951). See also his The Pound Era (Berkeley, 1971).

(3) Except for a handful of short poems, one canto and a fragment of another, published in an anthology of North American poetry (Budapest, 1966).

(4) "So that if official policy should change, we have the manuscript and can publish immediately. We've had a selected Borges for years, ready and waiting for the right 'cultural thaw'". Neither Borges nor Pound has been published in Hungary; my translations appeared through the auspices of an émigré publisher(Paris, 1975).

(5) Critique et vérité (Paris, 1966), p. 79.

(6) Babel, XVI, 2 (1970), p. 74

(7) See Ede Szabó, A műfordítás (Budapest, 1968).

(8) Cathay (London, 1915) and "Homage to Sextus Propertius" (1919) are the most famous in this genre.

(9) Guide to Kulchur (1938; rpt. New York, 1968), pp. 92-93.

(10) Literary Essays (London, 1954), p. 271.

(11) These are Hugh Kenner's words from his preface to Ezra Pound's Translations (New York, 1954), p. 10.

(12) Opus Posthumous (New York, 1957), p. 203.

(13) Literary Essays, p. 267.

(14) U. Weinreich is quoted by André Lefevere in Translating Poetry (Assen & Amsterdam, 1975), p. 142.

(15) Robert Bly, in Robert Bly and Tomas Tranströmer "Two Poets Translating", Translation, IV (1977), p. 53.

(16) Walter Benjamin, "The Task of the Translator", Illuminations (1955; transl. New York, 1968), p. 72. I share many of Benjamin's ideas on translation, though his concept of "pure language" is not to be equated with my "realm of deep truth".

(17) Literary Essays, p. 169.



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